Literature Review & Research Survey

WP 2 – Systematic Reflection and Theory Building

Deliverable 2.2 – Literature Review

ACKNOWLEDGEMENT

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Manuscript completed in February, 2012.

This document is available on the Internet at: www.incontext-fp7.eu

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List of Abbreviations

CPRs   Common-pool resources

NAO   Needs-abilities-opportunities

PCB   Perceived behavioural control

1   Introduction

Various disciplines such as psychology or political science have increasingly drawn their attention to research concepts and instruments aimed at promoting sustainable development, as well as the social and psychological drivers and barriers of sustainable behaviour. These efforts have produced a large body of theories and case studies on which to base the design of targeted interventions. InContext (Individuals in Context) aims to add to this literature by improving our understanding of the complexity and interplay between the various contexts of individual behaviour.

This research survey aims to provide an expansive overview of past and current research related to the study of these various contexts of individual behaviour. It assesses their relevance for the work of InContext, and helps situate the work of InContext in the broader research landscape for sustainable behavioural and social change. The following disciplines have been selected for the review:

- Social psychology
- Environmental psychology
- Behavioural economics
- Neuroscience
- Institutional approaches and the commons
- Social-ecological systems and resilience
- Theories of organization change
- Sociology

The selection of these disciplines is based on an initial brainstorming of the Ecologic InContext team and reflects in-depth knowledge of the different disciplines, personal interests as well as the aim to specifically address theories that are close to the common approach. A particular emphasis was placed on micro- and mezzo-level theories, due to their relevance for the examination of the individual and collective levels of the internal context. During the course of the project the research review will be expanded as needed, to integrate potentially fruitful additional research fields.

Due to our expansive determination of relevancy and the vastness of the body of literature examined, a truly comprehensive review lies beyond the scope of this paper. Nevertheless, an effort has been made to draw on a large variety of disciplines and research foci to provide an appropriate level of breadth and explore potential synergies between research fields.

The aim is to provide as much information as is necessary to determine whether deeper exploration of the research field is warranted. To this end we have provided references for further reading at the end of each section.

For the structure of the research survey we divide the research into disciplinary and topical categories. Within each category we have included theories, models and concepts, described in various levels of detail based on their relevance for InContext and explicability. An attempt has been made to subsume concepts under the disciplinary taxonomy they were traditionally associated with. With the movement towards greater trans-disciplinarity in sustainability science, such a categorization is by its very nature artificial and incomplete. For example, social psychology serves as the foundation for much of the new work in Behavioural Economics and Environmental Psychology, and new research paradigms, such as the transition systems approach, are better understood as an amalgamation of various different fields. However, with the transition to greater interdisciplinary research being a gradual one and social sustainability science being marked by significant path dependency, it becomes useful to structure the literature studied for this review in these overlapping categories in order to draw a better picture of the existing research landscape.

InContext is particularly focused on contributing new insights about individual and collective transition processes and better understanding the role of the inner context, including the role of needs in developing sustainable practices. Aspects we deem important in shaping such transition processes and which are inherent in our research thesis are:

- Inner contextual factors for behavioural change;
- The interplay of inner and outer contextual factors in behavioural change processes;
- The role of social surroundings for the behavioural change of individuals and collectives;

Each of the various disciplines, concepts, theories and models serves a different purpose, the most prominent of which are: offering ways to change or influence behaviour, sustaining behavioural change, explaining or understanding behaviour, as well as modelling and predicting behaviour. The value of the research survey for InContext varies with the nature of the individual concept explored. Primarily, however, they serve to:

- Offer a set of factors or psychological mechanisms for InContext to consider in achieving sustainable behaviour.
- Offer broader insights into the conditions under which individual and collective change takes place, providing evidence supporting InContext's approach to achieving behavioural change.

The following section presents the contributions of social psychology, followed by additional sections for each of the further disciplines listed above. Each section contains background information on the discipline, selected approaches and concepts deemed relevant for behavioural research, as well as a list of selected readings for the reader to deepen their understanding of the chosen topics. Finally, the conclusion takes insights gained from the literature review and research survey to reflect upon the common approach and identifies key insights from the literature that could supplement the current approach.

2 Social psychology

As the science concerned with studying the human mind and behaviour, psychology offers significant contributions to the InContext knowledge base, both from a theoretical and practical standpoint. Using observation, social experiments, interviews, and surveys, psychology aims to analyse what people believe or know about issues related to sustainability and assess the drivers and barriers of human behaviour. Psychology's contributions include more general research and theories of human mind and behaviour, such as intra and inter-personal behavioural models, as well as well as more case specific and applied research. Consequently it aids in informing much of the interdisciplinary research on fostering pro-environmental behavioural change. It is beyond the scope of this research survey to provide an overview of psychology as a whole, but the following sections will highlight some of the important findings in two critical sub disciplines: social and environmental psychology (section 3).

Social psychology is the sub discipline of psychology concerned with understanding how social phenomena, such as social norms/expectations, cultural mores, stereotypes, group dynamics, social learning, cohesion, attitudes and beliefs, influence us and how people interact with others. The broadness of the issues covered by social psychology and its direct relevance for achieving societal and individual behavioural change make it both one of the largest sub-disciplines as well as one whose findings are frequently used in interdisciplinary research. While social psychology was originally quite closely related to sociology, over time the disciplines became increasingly specialized and divergent in their research focus. However, a growing interest in the psychological factors underlying human behaviour has led to the increased use of social psychological theories and models to explain social phenomena, often in areas that were previously considered unrelated. The increasingly interdisciplinary nature of behavioural research is also apparent in the rising use of social psychological research in applied psychology geared towards social change.

2.1 Key topics

2.1.1 Social cognitive theory[1] [2] [3]

Developed by Canadian psychologist Albert Bandura in the 1970s, social cognitive theory is perhaps the most influential theory of learning and development related to behaviour. It is often set in contrast to the behaviourist school associated with Ivan Pavlov and Burrhus Frederic Skinner, which before had dominated social science theory about behavioural learning. The **behaviourist school** developed out of a number of important psychological experiments, perhaps most famously Skinner's experiments on rats and pigeons, in which he subjected the animals to small electric shocks in order to train specific behaviour. Focusing exclusively on observable behaviour and eschewing cognitive processes, behaviourists believed that learning was largely determined by a process of reinforcement of rewards, incentives and/or disincentives, known as conditioning, which occurred through direct experience. Accordingly, behaviourism held that behaviour modification and learning was for the most part a function of providing structured reinforcement schedules to enable the habitualization of behaviour. However, behaviourism's overly deterministic and mechanical view of human nature also gained a number of prominent critics, leading to a cognitive revolution in the social sciences beginning in the 1950s. This new scientific movement resisted the teachings of behaviourism and aimed to gain an understanding of the mind that included less easily observable processes.

Social cognitive theory, initially referred to as social learning theory, was one such response. Bandura, among others, provided an explanation of the learning process that went beyond the process of conditioning to include a social process in which the actions of others affect our behaviour. Bandura's fundamental contribution was 1) finding that learning could also take place vicariously through observation, 2) that learning new information must not necessarily lead to behavioural change, and 3) that cognition and intrinsic reinforcement, as opposed to external environmental reinforcement, also plays an important role in learning. These findings have important implications for our understanding of the sources of behavioural change: For one, the ability to learn through observation implies that learning can be facilitated by modelling behaviour as opposed to directly experiencing it. This modelling can also take a variety of different forms, including 1) a live model, in which a

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[1] McAlister, Perry, and Parcel, 'How Individuals, Environments, and Health Behaviors Interact: Social Cognitive Theory'.

[2] Bandura, 'Social Cognitive Theory'.

[3] Ormrod, *Human Learning, Third Edition*.

behaviour is acted out or demonstrated by a real person, 2) a verbal-instructional model, in which the behaviour is described and explained without being physically displayed, and 3) a symbolic model, in which behaviour is demonstrated by real or fictional characters in books, films, or other media forms. However, according to social cognitive theory, acquiring information through observation alone is not enough to lead to behavioural change. Rather, Bandura argues that there are several steps in observational learning through modelling, including 1) attention – the person must pay attention to the model, 2) retention – the person must remember the observed behaviour, 3) reproduction – the person must be able to replicate the observed behaviour, and 4) motivation – the person must be motivated to imitate the behaviour that has been modelled. This implies two things: first, we are more likely to follow behaviours modelled by people with whom we identify or have positive associations with, and secondly, that intrinsic motivation plays a large role in how we learn. Appropriately, one of social cognitive theory's most widely diffused concepts is that of self-efficacy. Social cognitive theory holds that self-efficacy, or the belief in one's ability to achieve a goal, directly affects one's ability to learn. This has been demonstrated in experiments showing that higher levels of self-efficacy for a given activity are associated with higher participation as well as greater success in observational learning. In turn, self-efficacy is affected by our expectations and awareness of future reinforcements of rewards or punishments, and therefore heavily influenced by previous successes and failures, and the messages of others. While initially largely a social psychology theory of learning, further theoretical development has led social cognitive theory to embrace contributions from sociology and political science aimed at increasing our understanding of the functioning and adaptive capabilities of groups and societies. For example, social learning has been adopted as a normative goal and theoretical concept in the study of natural resource management[4], and the concept of efficacy serve a central role in theories of community organizing and building[5]. Moreover, a number of social scientists are beginning to view social cognitive theory as a promising theoretical approach to understanding the complex influence of the internal and external context in shaping human behaviour. One reason is the concept of reciprocal determinism. Whereas many behavioural theories focus separately on the individual, social and environmental factors that shape individual or group behaviour, social

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[4] Here social learning has been defined as a change in understanding that goes beyond the individual to become situated within wider social units or communities of practice through social interactions between actors within social networks. For more information on social learning as an approach in natural resource management, see: Reed, Evely, Cundill, Fazey, Glass, Laing, Newig Parrish, Prell, Raymond, and Stringer, 'What is Social Learning?'.

[5] For more information on community organizing and building in the context of behavioural change interventions, see: Minkler, Wallerstein, and Wilson, 'Improving Community Health through Community Organization and Community Building'.

cognitive theory sees human behaviour as the result of the dynamic interplay between personal, behavioural and environmental influences. This approach recognizes how environments shape behaviour, but also looks at a person's individual capacity to interact with their environment by altering and constructing environments to suit their purposes. Accordingly, social cognitive theory has increasingly been applied as a theoretical lens to help guide the development of targeted intervention strategies.

2.1.2 Field theory [6]

Pioneered by the social psychologist Kurt Lewin, field theory holds that behaviour cannot be explained by solely intra-personal motivational factors. Instead it must be viewed as a function of the totality of an individual's situation. Only by viewing this complete psychological 'field' or 'life-space', defined as the totality of the inter-dependent coexisting facts, both personal and environmental, that make up a person's situation, can behaviour be truly understood. Drawing together insights from topology, psychology and sociology, Lewin had a major impact on how we view and work with groups, pioneered action research, and helped develop a more rounded understanding of behaviour, by considering both the person and their environment. One such contribution is, for example, Lewin's stage theory of behavioural change, which includes three distinct stages: 1) unfreezing of past behaviour and attitudes, 2) changing through exposure to new ideas, attitudes and experiences, and 3) refreezing through processes of reinforcement, confirmation and support for the change. This approach to conceptualizing behavioural change sees change as a psychologically dynamic process in which behaviour must be painfully unlearned and relearned, while restraining forces act to prevent such change and keep the person's current psychological field in a state of quasi-equilibrium. Field Theory has also helped influence more recent theoretical approaches to studying behavioural change, such as Paul C. Stern's attitude-behavioural-context model[7]. Stern and his colleagues view behaviour (B) as a function of the organism and its environment, or in other words, an "interactive product of personal sphere attitudinal values (A) and contextual factors".[8] Based on this analytical framework, Stern places a particular focus on understanding the relation or structural dynamics between attitudes and contextual factors, and finds that strongly positive or negative contextual factors tend to weaken the link

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[6] References for this section: Smith 'Kurt Lewin: groups, experiential learning and action research', Schein, 'Kurt Lewin's Change Theory in the Field and in the Classroom: Notes Toward a Model of Managed Learning'.

[7] Jackson, *Motivating Sustainable Consumption*, 92.

[8] Stern, 'New environmental theories', 415.

between attitudes and behaviour. Models such as these help conceptualize the complexity of fostering behavioural change by looking at the totality of the individual situation in which the change takes place.

2.1.3 Social influence [9]

One of the most important areas of social psychological research is the study of social influence, or the way individual's behaviour is influenced by social interaction. As such, it tries to find answers to such questions as how does behaviour change in group settings, how do individuals influence groups and how do minority groups influence norms. While social influence was originally studied as a psychological phenomena occurring in direct response to overt social forces, later studies have focused on more subtle, indirect and non-conscious aspects.[10] Two particularly important areas of interest in the study of social influence have been the phenomena of compliance and conformity. Compliance refers to the acquiescence of an individual to an explicit or implicit request, whereas conformity is the changing of one's behaviour to match the responses of others.[11] According to psychologists Robert B. Cialdini and Noah J. Goldstein (2004), the three core motivations for an individual's response to attempts to influence his/her behaviour are the desires for 1) accuracy, 2) affiliation and 3) the maintenance of a positive self-concept. The first motivation is rooted in people's motivation to achieve their goals in an effective and rewarding manner, necessitating an accurate perception of reality. However, this desire for accuracy can often influence our judgment and our tendency towards compliance or conformity in social settings, particularly in situations of uncertainty. Most importantly, people often rely on socially grounded decision-making heuristics in their day to day decision-making. In addition to being strongly influenced by perceived consensus or majority in group settings, people often use social norms to gain an accurate understanding of social situations and obey the orders of authority figures. This last point was most famously demonstrated by the Milgram experiments, in which volunteer test-takers were shown to be willing to obey orders given by an authority figure to apply lethal shocks to a fellow participant. The goal of affiliation is rooted in the fundamental motivation of human beings to create and maintain meaningful social relationships with others. As a result, most people use social heuristics to build, maintain and measure intimacy in relationships. These include, liking cues, the norm of reciprocation and desire to gain social approval. The liking cue refers to the tendency for people to be more willing to comply with someone that

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[9]   Cialdini and Goldstein, 'Social influence'.

[10] Cialdini and Goldstein, 'Social influence', 591-2.

[11] Cialdini and Goldstein, 'Social influence', 592,606.

we like. This response can result from the attractiveness of an individual, but also their perceived similarity. Reciprocation, one of the most powerful social forces in all human cultures, refers to the social norm that obliges us to repay others for what we have received from them. This practice serves the important role of helping us build trust with others, pushes us toward equity in our relationships, and serves to increase the likelihood of compliance with a request. Conformity is often socially prescribed, particularly in more individualistic cultures, but it is also normatively embraced in some cultures and situations. Therefore, even when not directly the target of other's disapproval, individuals may often be driven to conform to in order to maintain their sense of belonging and self esteem. Finally, people are strongly influenced by the need to enhance their self-concepts by behaving consistently with their actions, statements, beliefs and self-ascribed traits. This desire for personal consistency makes public commitments a particularly effective strategy in gaining compliance with requests, as can be seen in its use in various sales strategies. Moreover, researchers have found that the extent to which one identifies with a message source, whether a majority or a minority, can be a significant factor in determining the strategies individuals use to process information as well as the likelihood of social influence being successful. Sometimes described as the study of persuasion, the findings of social influence research are frequently applied in the areas of sales and marketing to aid in developing strategies aimed at influencing consumer behaviour, but are equally applicable in developing strategies for policy interventions.

2.1.4 Persuasion theories[12]

According to persuasion theory, behavioural change follows attitude change, and attitude change can be influenced through the assimilation and comprehension of persuasive information. This depends on three main factors: the credibility of the speaker (source), the persuasiveness of the arguments (message) and the responsiveness of the audience (the recipient). However, this rather linear model of behavioural change fails to be supported by empirical evidence, and is unable to explain why learning can occur without any change in attitudes, and attitude (and behaviour) change can occur without any assimilation of the persuasion message. Consequently, several attempts have been made to overcome the deficiencies of this theory, including the 'balance theory' of persuasion and the 'cognitive response' theory. One of the most influential recent persuasion theories is the elaboration likelihood model, which suggests two distinct types of psychological processes involved in attitude change – one involving central processing of information and the other involving

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[12] Jackson, *Motivating Sustainable Consumption*, 106-9.

peripheral processing. This can be best explained through an example: In the central processing strategy, motivating people to reduce their carbon footprint can be done either by informing them about the causes and effects of climate change, about what they can personally do to reduce their carbon footprint, etc. Such a strategy would assume people are already involved in climate change (hence this issue touches them personally). In a peripheral processing strategy, we are assuming low involvement of the target audience in climate change, and thus we would try to influence behaviour through peripheral cues, such as presenting role models which the target audience identifies with, which provide examples of how they have reduced their carbon footprint (think of a poster of an attractive woman riding her bike to work, saying something like this is how I keep fit and reduce my carbon footprint…). Evidence regarding the effectiveness of these strategies is context-dependant. On the one hand, central processing is known to lead to more durable changes in attitude, compared to peripheral processing. On the other hand peripheral processing can lead directly to the adoption of certain behaviours and attitude change actually follows the changes in behaviour. It is important to note that this type of behavioural change cannot occur without positive reinforcement from the external environment (i.e. external contextual factors). Moreover, peripheral cues need to be carefully designed in order to be effective - they must employ highly credible sources and be structured around a single, well-placed, highly positive message (among many other existing guidelines).

2.1.5 Trans-theoretical model of behavioural change

Developed in the 1970s by psychologists James O. Prochaska and Carlo DiClemente, the trans-theoretical Model of behavioural Change was developed to explain intentional behavioural change, particularly related to health. It views the behavioural change process as being characterized by a series of distinct stages, which proceed in a cyclical or spiral pattern, as opposed to as a unitary or linear one. These stages are as follows:

a. Pre-contemplation: In this stage the individual does not yet intend to change his behaviour in the foreseeable future.

b. Contemplation: At this stage the individual becomes aware of the problem and begins seriously considering taking action to address the problem.

c. Preparation: This stage involves both the intention of the individual to change and some minor action, largely met with limited success.

d. Action: In the action stage, the individual has actually changed their behaviour to overcome challenges or become consistent with their goals, but for a relatively brief period of time.

e. Maintenance: In the maintenance stage, the individual consolidates gains and takes steps to prevent relapse.

f. Termination: Having reached the termination stage, the individual no longer has the temptation to relapse and has 100% confidence in their ability to continue performing the behaviour.

The first three of these stages are motivational, while the last three are considered action stages. The transition from one stage to another is influenced by 10 processes of change affecting behavioural change at different points in the cycle. Prochaska and DiClemente refer to these 10 processes as consciousness raising, dramatic relief, self-reevaluation, self-liberation, social liberation, environmental reevalutation, counter-conditioning, stimulus control, reinforcement management, and helping relationships. Further research suggests that behavioural change can only take place in a supportive environment, which can include social, legal, cultural, political, ethical and spiritual, and resource features. Studies often focus on the variation of variables across stages, including the decisional balance (weighing of pros and cons of changing), self-efficacy and temptation. As the model sees behavioural change occurring in a cyclical pattern it acknowledges the potential for both progress and periodic relapse and is, therefore, particularly helpful in modelling behavioural change aimed at longer term behavioural maintenance. Initially applied to modelling change in smoking, it has increasingly served as the basis for developing effective interventions to promote health-related behaviour change, including exercise and diet adoption, condom use, blood donation and HIV prevention. Additional health-related behavioural change models that may be of interest include the 'health action process approach', the 'precaution adoption process model', the 'health belief model' and the 'relapse prevention model'.

2.1.6 Theory of reasoned action/planned behaviour[13] [14]

One of the most commonly used models for identifying where and how to target strategies for behavioural change is the 'theory of reasoned action' developed by psychologists Icek Ajzen and Martin Fischbein, which claims to be a general theory of behavioural change. Still assuming basic rationality in decision-making, the theory holds that behavioural intentions are the immediate antecedents to behaviour and emerge from the salient information and beliefs people have as to the likelihood that performing a particular behaviour will lead to a

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[13] Ibid, 41-50.

[14] Madden, Ellen, and Ajzen, 'A Comparison of the Theory of Planned Behavior and the Theory of Reasoned Action', 3-9.

specific outcome. These are in turn influenced on the one hand by behavioural beliefs (or attitudes), and on the other by normative beliefs (or the individual's subjective norms). Therefore, the theory departs a more closely rational-choice approach by assuming that, in addition to personal considerations and beliefs, the perception of people important to the target individual also play an important role in shaping behavioural intention. The theory has the virtue of providing a model to explain the antecedents of preference or attitude and has been applied to a variety of different settings. However, it is also limited in its failure to address such important issues as the role of habit and affect in influencing behaviour, and its reliance on the evaluation of survey and interview responses relating to intention, which while at times appropriate, can also be a problematic methodology. Ajzen responded to some of these critiques, in particular questions related to the volitional control of individuals, by developing the 'theory of planned behaviour'. While fundamentally the same as the theory of reasoned action, the theory of planned behaviour adds the concept of 'perceived behavioural control' (PBC). PBC refers to the perceived control of an individual over the opportunities, resources and skills the individual requires to perform a behaviour and is similar to Bandura's concept of self-efficacy. Therefore, while intention is held constant, our ability to successfully carry out a behaviour depends largely on the strength of an individual's belief in their ability to carry it out. This addition to the model has made the theory of planned behaviour quite popular in efforts to predict and understand behaviour, identified by one study to have been applied in 154 different contexts and relating to a wide variety of behaviours. However, its inability to resolve many of the critiques of the theory of reasoned action certainly calls into question the claim of its founders to represent a general theory of behavioural change. The Theory of Planned behaviour is still fundamentally rooted in rational choice, in the sense that it presents individual behavioural decision-making as based on a cost-benefit analysis of various courses of action according to the aforementioned factors. While this may at times be an appropriate predictor of behaviour, much of social science research indicates that behaviour is often more complex than these simplified models imply. Other behavioural change models attempt to address these weaknesses by incorporating additional factors such as habits and emotional responses.

2.1.7 Norm activation theory[15] [16]

It is commonly assumed that pro-environmental behaviour is driven by altruistic motives, rather than self-serving interests, however, some researchers have argued that, while there

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[15] Jackson, *Motivating Sustainable Consumption*, 51-61.

[16] Stern et al, 'A value-belief-norm theory of support for social movements', 81-98.

is a moral case for such pro-environmental behaviour, it is mainly driven by social norms rather than an individual's intrinsic motivation. This is the basic premise of Shalom Schwartz's (1977) 'norm activation theory', which holds that personal norms are the only direct determinants of pro-social behaviour. According to Schwartz, personal norms are feelings of strong moral obligation that people experience to engage in pro-social behaviour. In contrast to the theory of planned behaviour, these norms are not mediated by the individual's intentions. Schwartz identifies two direct antecedents to internalized personal norms: 1) an awareness of the consequences of one's actions, and 2) an acceptance of personal responsibility that one holds for those consequences. Accordingly, the strength of these two factors helps determine the strength of the link between the personal norm and behaviour. Due to its goal of explaining pro-social behaviour, Schwartz's theory has frequently been applied to help understand and predict pro-environmental behaviour. One adoption of Schwartz's theory is Paul Stern's value-belief-norm theory (VBN), which links norm activation theory with theories of environmentalism and social movements. In principle, VBN is a theory of public support, holding that general public support may be one the most important resources determining the success of the environmental movement. Researchers of social movements have typically focused on committed public activism, such as active involvement in a social movement's organizations and participation in demonstrations. However, a number of less intense kinds of support are critical to the success of a social movement as well. These non-activist types of support include: 1) low commitment active citizenship – political activities that present less risk than engaged activism, 2) support and acceptance of public policies that require material sacrifice – a movement's struggles are made easier if many people are willing to make the sacrifice voluntarily, 3) behaviour in the personal or private sphere – includes consumer behaviours, which support the goals of the movement, such as reduced energy use. Stern holds that general movement support lies in the conjunction of values, beliefs and personal norms, and argues that a movement's success depends on its ability to build support for activating or reshaping personal norms to create feelings of obligation. Accordingly, norm-based action flows from three factors: 1) acceptance of particular personal values, 2) beliefs that things important to those values are under threat, and 3) beliefs that actions initiated by the individual can help alleviate the threat and restore the values. A premise of much of the work is that an individual's basic pro-social attitudes and moral norms are significant predictors of pro-environmental behaviour. Data from this study and two others indicates that altruistic values are most strongly implicated in the activation of a personal pro-environmental norm, while egoistic values tend to be negatively correlated. The precise role of "biospheric" values, or values related to the environment, is unresolved.

2.1.8 The focus theory of normative conduct[17]

Another interesting norm based theory is Cialdini's 'focus theory of normative conduct', which attempts to explain the influence of social context on personal conduct. Cialdini, whom we've already met in the section on social influence[18] holds that two kinds of norms exist that are formally and functionally distinct. The first kind of norm is a descriptive norm, which carries little moral weight and simply refers to the perception we hold about what is normal in a given situation. Descriptive norms play an adaptive role in our behaviour, by allowing us to know what behaviour is appropriate in a given context by simply copying the way others around us are behaving. As such, it is a kind of heuristic for guiding or moderating behaviour without spending too much cognitive effort. An injunctive social norm, on the other hand, reflects the moral rules and guidelines of the social group in a given context. Injunctive norms tend to motivate and constrain our actions by promising social rewards and sanctions for acting or not acting in certain ways. Therefore, social norms relate to social outcomes associated with performance of a given behaviour and our ability to adhere to social norms can critically influence how we are perceived in our peer group. Cialdini points out that it is not always clear cut which social norms influence our behaviour. In fact, contradictory normative and injunctive norms may apply to the same situation. However, Cialdini argues that we respond to normative influences in a rather flexible way, largely depending on their salience, or extent to which they stand out, in a given situation. For example, studies have shown that people who are dispositional and temporally focused on normative considerations are decidedly more likely to act in norm consistent ways.

2.1.9 Theory of inter-personal behaviour[19]

While infrequently used on account of its complexity, psychologist Harry C. Triandis's Theory of Inter-Personal behaviour draws attention to a frequently omitted aspect of human behaviour, namely the importance of habit. Drawing attention to this weakness, Triandis proposed an integrated model that saw the likelihood of engaging in a given behaviour as a function of: 1) the habit of performing the behaviour, 2) the intention to perform the behaviour and 3) conditions which act to facilitate or inhibit performance of the behaviour. In other words, intention and habits are the main antecedents of behaviour, but are both mediated by facilitating conditions. Intention is determined by three sub-antecedents: 1) attitudes – the

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[17] Jackson, *Motivating Sustainable Consumption*, 51-60.

[18] Cialdini and Goldstein, 'Social influence'.

[19] Jackson, *Motivating Sustainable Consumption*, 93-5.

perceived value of the expected consequences, 2) social factors – including norms, roles and self-concept, and 3) emotional responses – unconscious and instinctive responses to particular situations. The strength of the model is that it captures many of the criticisms leveled at rational choice theory, while also adopting the important role of habit and affect. It therefore recognizes that when behaviours are repeated they become increasingly automated, and many of our behavioural choices occur with little conscious control.

2.2 Selected reading

Bandura, Albert. 'Social Cognitive Theory'. In *Annals of Child Development*, 6:1-60. Greenwich, CT: JAI Press, 1989.

Glanz, K., B. K Rimer, und K. Viswanath, Hrsg. *Health behavior and health education: theory, research, and practice*. 4th Aufl. San Francisco: Jossey-Bass, 2008.

Tim Holmes, Elena Blackmore, Richard Hawkins, and Tom Wakeford. *The Common Cause Handbook*. United Kingdom: Public Interest Research Centre, 2011.

Jackson, T. *Motivating Sustainable Consumption: A Review of Evidence on Consumer Behaviour and Behavioural Change - A report to the Sustainable Development Research Network*. ESRC Sustainable Technologies Programme. Surrey: Centre for Environmental Strategy, University of Surrey, Guildford, 2005.

Stern, P. C. 'New environmental theories: Toward a coherent theory of environmentally significant behavior'. *Journal of social issues* 56, Nr. 3 (2000): 407–424.

3 Environmental psychology

In the broadest sense, environmental psychology is the area of psychology, which studies the "interactions and relations between people and their environments"[20]. Traditionally, this has meant focusing on the built world, or the effect of physical environment on human thoughts, feelings and behaviours. Thus, in its formative years environmental psychology was largely restricted to applications in architecture and urban planning with a focus on individual reactions to environmental surroundings and their functional effectiveness[21].

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[20] Oskamp and Schultz, *Applied Social Psychology*, 206.

[21] Pol, 'Blueprints for a History of Environmental Psychology (I)'.

However, characteristic of many of the changes occurring in the social sciences, environmental psychology as a research field has undergone both a rebirth and a fundamental transition. Beginning in the 1970s, environmental psychology experienced a social and environmental shift away from traditional issues such as territoriality in the office or values as they influence perception of landscapes, to understanding larger environmental challenges[22]. Moreover, moving away from a methodological individualism and the proximate level of analysis, environmental psychologists have increasingly focused on the inverse relationship between humans and their environments, by stressing how human actions affect the environment[23]. These changes within the discipline have resulted in increased interdisciplinary collaboration, a growing focus on larger levels of analysis as well as a politicization of the discipline towards issues of public policy related to sustainable development[24].

Due to these developments, it is difficult to speak of environmental psychology as a unified field. In fact, environmental psychology is closely related to or even alternatively referred to by such names as architectural psychology, ecological psychology, environmental sociology and conservation psychology, among others. This diversity of labels speaks both to the broad scope of environmental psychology, as well as the divergence of understanding among researchers as to its proper orientation. Instead, one can speak of three different understandings environmental psychology. The first is as a sub-discipline of psychology as it was traditionally understood, focusing primarily on the effect of the environment on humans. The second, sometimes associated with the term conservation psychology, is as a field of applied psychology that aims to use relevant insights from psychology and other social science to affect human behavioural change towards greater sustainability[25]. The third is as an expanded sub-discipline, which through interdisciplinary contributions and a new research focus is both expanding in scope, finding new areas of application and making unique contributions to other fields of study[26]. While far from being a universally understood demarcation of the field, this broader third understanding of environmental psychology will be used for the purposes of this research survey.

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[22] Gifford, 'Environmental psychology and sustainable development'.

[23] Oskamp and Schultz, *Applied Social Psychology*, 206.

[24] Gifford, 'Environmental psychology and sustainable development', 201-6.

[25] Clayton and Brook, 'Can psychology help save the world?', 88.

[26] Gifford, 'Environmental psychology and sustainable development'.

3.1 Key topics

3.1.1 Environmental stressors

One important area of research in environmental psychology relates to the effects of environmental stressors, including crowding, daily hassles, life events, noise and temperature on human behaviour, health and well-being. The aim of this research is primarily functional, in that the efforts to understand the effects our environments have on us are largely targeted at optimizing environmental conditions for human functioning. Of particular interest is research that has been done on human spatial behaviour and noise pollution. Research on human spatial behaviour analyzes the effects of density (the number of people per space) and crowding (the subjective experiences we have due to density) on human behaviour and health. Studies have found that crowding can act as an environmental stressor capable of eliciting negative psychological, physiological and social outcomes. In one study, for example, crowded subjects were found to have moderate decrements in complex task performance when compared with non-crowded subjects, including poorer performance in group cooperation, higher blood pressure and pulse rates, as well as greater behavioural indices of stress, including greater behavioural stereotypes and increased defensive postures[27]. Other experiments performed with crowding in classrooms found children, particularly males, to be more stressed, less cooperative and to feel less comfortable when exposed to crowding conditions[28]. Studies such as these have been applied to a variety of contexts to help us better understand the effect of our spatial environments on our health, behaviour and well-being. Research on noise pollution, on the other hand, looks at the deleterious effects auditory environmental stressors. Noise as a stressor was found to inhibit complex task performance, cause annoyance and modify social behaviour, as well as be associated with a number of negative physiological effects, including hypertension and elevated blood pressure. Moreover, children exposed to chronic environmental noise, such as those living close to airports, were found to have impaired reading-comprehension and long-term memory[29]. Studies such as these can help explain the role that noise pollution plays in our lives, in order to better tailor our auditory environments for optimal well-being.

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[27] Evans, 'Behavioral and Physiological Consequences of Crowding in Humans'.

[28] Aiello, Nicosia, and Thompson, 'Physiological, social, and behavioral consequences of crowding on children and adolescents'.

[29] Stansfeld and Matheson, 'Noise pollution'.

3.1.2 Environmental risks[30]

With the increasing complexity and global nature of many contemporary societal problems, perceived risk has been a particular focus of policy-makers and researchers for some decades. Risk perception research, which can be traced back to the nuclear debate of the 1960s, attempts to explain variance in the ways risk is perceived in a given population, by looking at such factors as the nature of the risk, the way it is presented, and a variety of social, cultural and psychological factors. While risk perception is not strictly an area of research in environmental psychology, environmental psychologists have looked at risk perceptions for a variety of environmental risks, most notably environmental pollution and nuclear energy. Of late, however, environmental psychologists have focused particular attention on the unique issues associated with the risk perception of climate change. This research focus is of particular importance for InContext, as understanding how to change people's assessment of future risks of climate change, might lead them to become more willing to undergo lifestyle changes that lead to mitigation and/or sustainable behaviour. As climate change is represented by trends in highly variable scientific and technical measurements, it is generally difficult to identify with it from personal experience. In other words, as it is so hard to detect, people have to rely on scientific models and expert judgment as opposed to personal experience. Therefore, the experience is indirect and virtual, mediated by news coverage and events in distant regions. The distinction between personal experience of possible outcomes and statistical descriptions has received a great deal of attention in risk perception research, as it has been found that receiving ostensibly the same information in these different ways can lead to dramatically different perceptions and responses. Whereas decisions rooted in experience often involve associative and affective processes that are fast and automatic, statistical descriptions require analytical techniques the must be learned. As a result, the risk perceptions of climate scientists are based in a large part on analytical processing, whereas non-scientists typically rely on the more readily available associative and affective processing. Moreover, people often apply sharp discounts to costs or benefits of events that will happen in the future, relative to experiencing them immediately. This suggests that people construe future events differently from events in the present. Whereas events in the distant future are construed in abstract terms events closer in time are construed in more concrete terms. These then differ in their strength and impact. The strong negative effect associated with concrete, immediate tasks and sacrifices may drive ecologically damaging consumption decisions and actions, particularly by influencing such choices as choosing between immediate or delayed consumption. Furthermore, this

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[30] Swim et al., 'Psychology and Global Climate Change', 33-49.

choice is influenced by social norms and/or positive or negative affective reactions to a choice. Additional theories of risk perception include Douglas and Wildavsky's cultural theory, which divides people into five cultural categories based on supposed patterns of interpersonal relationships in ways that affect perceptions of risk: 1) egalitarians, 2) individualists, 3) hierarchists, 4) fatalists and 5) hermitic. For more on the role of risk perception in decision making see the section 'behavioural economics'.

3.1.3 Social marketing [31] [32]

As pointed out in the introduction, with the social turn in environmental psychology the discipline has become increasingly motivated by a more hands-on and value-laden approach to research. This shift of research emphasis has been particularly noticeable in the efforts of environmental psychologists to apply the findings of psychology towards the goal of fostering pro-environmental behaviour among individuals and communities. As such, the past decades have seen numerous applied psychological research projects aimed at this goal, resulting in a growing body of academic and policy related literature on sustainable behavioural change. One of the better known outcomes of such applied research is the application of an approach known as social marketing. Social marketing is the application of commercial marketing techniques to the analysis, planning, execution and evaluation of programs designed to influence the voluntary behaviour of a target audience and improve welfare. Use of the social marketing approach is driven by the belief that the large scale informational campaigns that were frequently used to foster pro-environmental behaviour in the past are often either ineffective or inadequate given the complexity of the task at hand. Instead of simply providing information, social marketing is based on the notion that behavioural change is most effectively achieved through community level initiatives that work to remove barriers to and amplify the benefits of the targeted behaviour. These barriers include both internal and external factors and can be quite complex due to their multifaceted nature. The approach includes 5 Steps: 1) selecting which behaviour to target, 2) identifying the barriers and benefits to the selected behaviour, 3) developing a strategy that reduces barriers to the behaviours to be promoted while simultaneously increasing the behaviour's perceived benefits, 4) piloting the strategy, and 5) evaluating the strategy once it has been broadly implemented. It is hoped that by using such new approaches and learning from our experiences with them environmental psychologists will be able to develop enhanced models for engaging in efforts to foster sustainable behavioural change. Whether scientists will be

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[31] McKenzie-Mohr and Smith, *Fostering sustainable behavior*.

[32] Storey, Saffitz, and Rimón, „Social Marketing".

successful in these efforts remains to be seen, and is among the tasks of the InContext Project to determine.

3.2 Selected reading

Clayton, S., und A. Brook. „Can psychology help save the world? A model for conservation psychology". *Analyses of Social Issues and Public Policy* 5, Nr. 1 (2005): 87–102.

Gifford, R. „Environmental psychology and sustainable development: Expansion, maturation, and challenges". *Journal of Social Issues* 63, Nr. 1 (2007): 199–212.

McKenzie-Mohr, D., und W. Smith. *Fostering sustainable behavior: An introduction to community-based social marketing*. New Society Pub, 1999.

Swim, J., S. Clayton, T. Doherty, P. D.S Self, L. L.C.R Gifford, G. Howard, J. Reser, P. Stern, und E. Weber. „Psychology and Global Climate Change: Addressing a Multi-faceted Phenomenon and Set of Challenges A Report by the American Psychological Association's Task Force on the Interface Between Psychology and Global Climate Change Members". *Retrieved from http://www. apa. org/science/about/publications/climate change. pdf* (2010).

4 Behavioural economics[33]

A closely related field of study is that of behavioural economics, the sub-discipline of economics which looks at the psychological underpinnings of economic theory and decision-making. While behavioural economics is an interdisciplinary field of study that draws on a large range of scholarship, including computer science, sociology, neuroscience and anthropology, most of its work is inspired by psychology, drawing particularly heavily from Social and Cognitive Psychology. In fact, in a sense it can be understood as a field of applied psychology specifically directed at understanding people's economic behaviour. behavioural economics primarily emerged in response to the behaviourism of neo-classical economics, which like the behaviourism in psychology eschewed research of the unobservable, thereby frequently omitting relevant social and cognitive aspects of economic processes. In particular, behavioural Economists challenged the notion of rational-man lying at the root of rational-choice theory in economics. Instead of viewing humans as utility-maximizes that rationally weigh the costs and benefits of various forms of action, behavioural economists

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[33] Angner and Loewenstein, „Behavioral Economics".Ibid.

instead posited that much of people's economic behaviour is in fact irrational or undermined by the bounded rationality of man resulting from time constraints and cognitive limitations. Therefore, by excluding such cognitive elements as belief, emotions and decision-making rule-of-thumb, economics was neglecting critical aspects determining economic behaviour and preventing our better understanding of the bounds of rationality. This development was not entirely novel, as many classical economists, including Adam Smith and David Hume, had felt quite comfortable in acknowledging the psychological aspects underpinning human behaviour. Nonetheless, behavioural Economics served as a form of cognitive turn or rediscovery for a discipline that had long been dominated by fairly narrow ontological and methodological perspectives. Mentioned as early as 1958, it has since risen to a position of prominence in both the public and the private sector, in particular for its ability to inform efforts to devise policy interventions and marketing efforts aimed at effecting consumer behaviour, as well as better understand decision-making in a variety of different contexts.

4.1 Key topics

4.1.1 Framing and loss aversion[34][35]

One of the most important and recognized contributions of behavioural Economics has been the development of Prospect Theory, which introduces what is called "framing effects". Developed by psychologists Daniel Kahneman and Amos Tversky, among others, the framing effect rests on the basic principle that people generally passively accept the way a problem or choice is presented to them when making a decision. Whereas standard economic theory posits that preferences are unaffected by the way a choice is presented, research has demonstrated that the "framing", or way a problem is presented, can strongly influence our decision-making. Accordingly, framing a problem in different ways may elicit fundamentally different responses even if they are objectively expressing the same information. For example, in a classic experiment people were informed about a dangerous Asian disease and asked to choose between two undesirable options. In the "positive frame", people were asked to choose between A) saving 200 lives for sure, and B) a one-third chance of saving all 600 with a two-third chance of saving no one. In the "negative frame", people were asked to choose between C) 400 people dying for sure, or D) a two-thirds chance of 600 dying and a one-third chance of no one dying. While objectively equivalent in

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[34] Ibid.

[35] *Designing policy to influence consumers:Consumer behaviour relating to the purchasing ofenvironmentally preferable goods*, 32-38.

terms of lives lost or at risk, most people choose options A and D. Such experiments draw attention to a phenomenon Kahneman and Tversky call loss aversion, which is that relative to a particular reference point held by an individual, humans are generally much more averse to loss than they are content with gains resulting from their choices. This discovery has important implications for our understanding of the psychology of decision making. For example, when developing marketing or information campaigns, efforts to influence decision making or foster behavioural change will presumably be more effective when framed in terms of a loss than when framed in terms of a gain, a useful insight for designing policy interventions. Loss aversion is also linked to a number of other psychological phenomena, such as the endowment effect and the status quo bias. The endowment effect states that the price we are willing to pay to acquire a good is typically much lower than the price we are willing to part with it. In other words, people tend to value items more once they own them. This implies that our valuation of goods is in part determined by our emotional attachment to them, as opposed to resulting from a purely rational economic analysis. It also indicates that designing policies to encourage consumers to replace products may be challenging as they may often be resisted by consumers unwilling to part with their possessions. Loss aversion also contributes to a status quo bias, referring to the theory that the decisions we make result from weighing the advantages and disadvantages of a choice relative to the situation in which we find ourselves. In other words, our given situation becomes the reference point from which we make our decisions. This phenomena leads to a kind of path dependence, as people generally choose the familiar over the unfamiliar. Accordingly, the status quo bias has been used as an argument for using default options as a policy tool for locking in recommended behaviour.

4.1.2 Decision-making heuristics[36]

While consumer autonomy and freedom of choice lie at the root of free market economics, people are often confronted with an over-abundance of information that make it difficult to manage decisions and lead to reduced satisfaction. In fact, research in cognitive psychology has demonstrated that our short-term memory can generally only handle about 7 (+/-2) options while making decisions in any given situation. In line with this view, research has demonstrated that as choice increases, consumers consider fewer choices, process less information and evaluate information differently. Therefore, the provision of extensive choices, while initially desirable, can also result in demotivation and a form of decision making paralysis. This dilemma, referred to by behavioural economists as the tyranny or

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[36] Ibid, 30-32.

paradox of choice, leads individuals to often be unable or unwilling to employ purely rational decision-making strategies in making choices, and instead rely on "rules of thumb" as mental short-cuts to help speed up decision-making. Since Kahneman's early work on this issue in the 1970s, behavioural economists have identified over 60 heuristics that help us to quickly make decisions, including the anchoring and adjustment heuristic, the availability heuristic and the representativeness heuristic. Anchoring and adjustment refers to a strategy people use to estimate the unknown value of something. The process starts by determining an anchor, which is an initial judgment based on an approximation or an implicitly suggested reference point, from which we then adjust our position. For example, studies have shown that when asked to estimate the population of a major city or town, they often base these estimates on the population of their home town, highlighting the frequent arbitrary nature of the anchors we choose. The availability heuristic is used to assess the risk, likelihood, or likely impact of a course of action, by considering similar examples that come to mind. This highlights the major role that memory plays in decision making, as the availability heuristic hypothesis posits that judgments are frequently based on how easy it is to think of previous examples of acting in a certain way or experiencing a similar situation. Closely related, the representativeness heuristic refers to the practice categorizing a situation based on a pattern of previous experiences or beliefs. In other words, we take the limited information that we have about a situation and treat it as representative for making a decision. This heuristic is similar to "judging a book by its cover" or stereotyping, in that we make a decision based on pattern recognition from the limited information we have gathered, while often neglecting the more objective probability of our intuition being correct. This approach helps us make a quick decision, but can quickly lead to close-mindedness and ill-informed judgments.

4.1.3 Mental accounting[37]

Contrary to standard economics, behavioural economics research has demonstrated that the value placed on an item is not simply its replacement value, but rather influenced by a number of highly nuanced factors, referred to as mental accounting. One example of such mental accounting is a phenomenon behavioural economists refer to as "no-spend" accounting, in which we try to avoid the feeling of having spent money on an item we will be consuming at a later date, by thinking of the purchases as investments. For instance, when purchasing a coffee maker, the customer may think of the potential savings resulting from no longer needing to visit the coffee shop, as opposed to the cost of the coffee maker itself.

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[37] Ibid, 38-42.

While "no-spend" accounting does not necessarily imply poor decision-making and may lead to cost-effectiveness, this form of mental accounting allows the purchaser to avoid thinking about the true implications of their spending. Another way mental accounting influences our decision-making is the difference between our evaluation of absolute and relative costs. For example, when told about an opportunity to save €10 on the purchase of a €500 suit by walking to a nearby store and likewise for a €15 pen, a much higher percentage of people were likely to walk to the nearby shop for the pen than for the suit. In other words, we evaluate costs relative to other costs, rather than in absolute terms. Perhaps the best documented example of mental accounting, however, is the concept of hyperbolic discounting. Hyperbolic discounting refers to the tendency of people to discount the value of a later reward by a factor that increases with the length of the delay. In other words, people are present-biased, as they generally show preference for rewards that arrive sooner rather than later. As such, time greatly influences the way we value items, and in a highly inconsistent way. For example, we tend to procrastinate (take an action too late) when actions involve immediate costs and preoperate (take an action too soon), when actions involve immediate rewards. Additional factors influencing our consumption behaviour include such fickle influences as emotional attachment to an item and 'sunk costs', or the tendency for us to be influenced by the costs of prior investments. While these factors are varied in nature, what they share in common is their end-result: divergence from simple rational-choice models of cost-benefit analysis. Instead of making purely objective decisions based on a thorough review of all relevant information, behavioural economics draws attention to the fact that a large number of decisions concerning valuations are both inconsistent and influenced by numerous cognitive biases.

4.2 Selected reading

Designing policy to influence consumers: Consumer behaviour relating to the purchasing of environmentally preferable goods. A project under the Framework contract for economic analysis ENV.G.1/FRA/2006/0073 – 2nd. London: Policy Studies Institute, o. J. http://ec.europa.eu/environment/enveco/pdf/RealWorldConsumerBehaviour.pdf.

Angner, Erik, und George Loewenstein. „Behavioral *Economics*". *SSRN eLibrary* (Januar 14, 2007). http://papers.ssrn.com/sol3/papers.cfm?abstract_id=957148.

5 Neuroscience

Neuroscience is a relatively young science, which studies the nervous system, in particular the neurobiology of the brain. Originally seen as a branch of biology, neuroscience has

increasingly collaborated with various other fields, including medicine, computer science, psychology, and economics/business, making it one of the most dynamic and heterogeneous inter-disciplinary fields of study[38]. While up to a few decades ago our knowledge of the biological workings of the human brain was relatively limited, the invention and application of new neural imaging and genetic research technology, as well as new findings from research on mental disorders and brain injury, has allowed for remarkable progress in the field over a fairly short period of time. These new insights have allowed us to gain a better understanding of human cognition, as well its relation to other biological and social processes.

5.1 Key topics[39]

5.1.1 Mirror neurons

Mirror neurons are a specific type of neuron found in regions of the brain responsible for motor functions that fire both when we observe an action being carried out by someone else and when we perform the same action. This discovery demonstrates that humans have the capacity to share common experiences with other human beings, including pain, pleasure and other sensations, as well as acquire new information through observation alone. While the function of this system is still hotly debated, mirror neurons have been linked to learning through imitation, language acquisition, empathy and understanding the actions of others[40]. These findings also help explain how social customs and experiences influence how we behave through a process of observed socialization. For example, a person that sees another person behaving aggressively may become aggressive in return.

5.1.2 Genetic disposition

The role of genes in brain development and in influencing our actions is an extremely contested subject, due to its obvious implications for questions concerning nature vs. nurture in human development. Genes clearly play an important role in determining the functioning of the brain, but their expression is influenced by a complex confluence of factors, including

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[38] While neuroscience has at times been interpreted quite broadly as any scientific research related to the brain, including nearly all of psychology, in the context of this study our understanding is limited to research of the neurobiology of cognition.

[39] It is important to note that many of these findings, while groundbreaking, are still highly contested or in an early stage of scientific development. This is not surprising considering the extreme complexity of the human brain and the novelty of many of the findings.

[40] Rizzolatti and Sinigaglia, *Mirrors in the brain*.

environmental and interpersonal interaction. For example, while genetic factors were found to be able to determine aggression, its expression is modulated through social interaction and environmental factors like stress, in that aggression can become more or less acute based on the social environment[41] [42].

5.1.3 The critical role of emotion

New findings about the role of emotion in effecting our behaviour has been met with a great deal of interest by natural and social scientists alike, particularly related to its influence on decision making. This fascination with emotion is to some degree an indication of how little we really know about this complex topic, which goes to the heart of such difficult issues as the conscious vs. unconscious divide that has troubled philosophers for centuries. However, neuroscience research has been able to make progress in understanding the biological regulation of emotion and to better locate the cognitive sources of "rational" and "emotional" processes in the human brain. For example, it is now known that these regulatory processes are largely a function of communication between regions of the brain known as the prefrontal cortex and the amygdala. Whereas the prefrontal cortex is responsible for the executive functions we usually associate with rational decision-making, such as distinguishing between conflicting information and predicting outcomes, the amygdala plays a primary role in processing and remembering emotional reactions, and is therefore responsible for triggering many of our biological responses. We also know that many of the social aspects of emotion are transmitted to us through facial expressions. Therefore, there are certain aspects of our consciousness that are biological responses that occur in our unconscious and others that are moderated by our conscious awareness. While our cognitive decision making often closely resembles a rational decision making model, many of our most important decision-making and behavioural heuristics, in fact, reside in our 'emotional brain,' and are utilized unconsciously. Better understanding this dynamic will help inform us as to how biology affects the way we learn and make decisions[43] [44].

The pace of new discoveries in this field is extraordinary and our understanding of neurobiology is in a stage of rapid development. For this reason, neuroscience has been a topic of growing interest in both broad public discourse and research fields previously

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[41] LeDoux, *Synaptic self*.

[42] Reif et al., 'Nature and Nurture Predispose to Violent Behavior'.

[43] Damasio, *Self Comes to Mind*.

[44] Lehrer, *How We Decide*.

associated with the social sciences, including business, economics and policy studies[45]. It should be noted, however, that many of these findings are not in fact in the strictest sense novel. For example, while we have only more recently been able to better understand the neurobiology underlying the plasticity of the brain, the concept of plasticity itself was already being discussed in 1890, when it was first proposed by psychologist William James[46]. Moreover, many of the most important lessons that can be drawn from our improved understanding of the cognitive processes involved in learning and decision making have already been at least in part captured by social science theories and models, or even basic folk wisdom[47]. What they do provide, however, is a biological and often more scientific basis for judging the validity of our previously held knowledge and, hopefully, a more nuanced understanding of how and when the various existing social science theories or models may apply, what their respective deficits are and where gaps in research may still exist.

It is in this context that neuroscience has particular relevance for the work of InContext. With the knowledge gained from neuroscience we can gain a better understanding of the cognition related to intra- and interpersonal processes and their effects on human behaviour, while also comparing these biologically based findings with those previously developed in psychology. For example, the discovery of mirror neurons seems to confirm Albert Bandura's Social Cognitive Theory, in that it presents a neurobiological explanation for learning through observation and some of its implications for socialization. On the other hand, some of the findings related to the role of emotion seem to confirm the findings of the behaviouralist School of psychology, which sees learning as a process of conditioning. These findings may help us better understand how and when various forms of behaviour develop into habits or social practices as a function of unconscious decision making, and the extent to which they are influenced by environmental factors and genetic dispositions[48]. Further interdisciplinary collaboration with the field of neuroscience should be explored.

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[45] This growing interest in neuroscience is particularly apparent in the number of journalistic works based on recent findings that have gone on to become bestsellers and drawn the attention in intellectual, business and policy circles. For examples see Malcolm Gladwell, *Blink: The Power of Thinking Without Thinking* (Penguin, 2006). David Brooks, *The Social Animal: The Hidden Sources of Love, Character, and Achievement* (Random House, 2011).

[46] James, *The Principles of Psychology, Vol. 1.*

[47] One renowned American journalist and student of neuroscience has even written a book comparing many of the new discoveries in neuroscience with insights made by many of the world's most famous artists, including Marcel Proust, Gertrude Stein and Igor Stravinsky. See Lehrer, *Proust Was a Neuroscientist.*

[48] Moreover, neuroscience provides an interesting perspective from which to view such important fundamental debates in social science as agency/structure, conscious vs. unconscious, free-will vs. determinism, and nurture vs. nature.

5.2 Selected reading

Damasio, Antonio. *Self Comes to Mind: Constructing the Conscious Brain*. 1st Aufl. Pantheon, 2010.

LeDoux, Joseph. *Synaptic self: how our brains become who we are*. New York: Viking, 2002.

Lehrer, Jonah. *How We Decide*. 1st Ed. Mariner Books, 2010.

Rizzolatti, Giacomo, und Corrado Sinigaglia. *Mirrors in the brain : how our minds share actions and emotions*. Oxford; New York: Oxford University Press, 2008.

6 Institutional approaches and the commons

Following in the tradition of behavioural economics, one branch of analysis based on rationalist economics focuses on the use of institutions as a means of changing behaviours and solving problems of cooperation and coordination. Study of commons is not a recent phenomenon. In the 19th century, and up until in the late 1970s, most scholarship on commons viewed common property as a vestige of past historical arrangements; August Comte, Emile Durkheim, Karl Marx, Herbert Spencer, Ferdinant Tonnies and Max Weber all theorized that communal ownership arrangements "would disappear over time."[49]

More recent scholarship, concerns itself with common-pool resources (CPRs). Elinor Ostrom defines CPRs as "a natural or man-made resource system that is sufficiently large as to make it costly (but not impossible) to exclude potential beneficiaries from obtaining benefits from its use."[50] CPRs are non-excludable to potential beneficiaries, and therefore both face the potential problem of 'free-riding,' where some users of the resource fail to contribute to its provisioning. In a CPR, the use of one resource unit by a user (an actor withdrawing from a CPR) precludes the use of it by another. CPR systems are characterized by the potential for a 'social dilemma' where actors seeking to maximize short term benefits over-appropriate resources. In the long term, this leads to suboptimal payoffs for that individual actor, as well as for the group, and potential resource depletion.[51] While outcomes closer to a collective optimum could be achieved with cooperation, each individual lacks the motivation to do so. Each actor will predict that, like him or herself, other individuals' will act to maximize individual returns.

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[49] Arun Agrawal, 'Common Resources and Institutional Sustainability'.[50]   Ibid, 30.

[50] Ibid, 30.

[51] Ostrom, Roy Gardner and James Walker, *Rules, Games, & Common-Pool Resources,* 13-19.

The perception that CPRs would disappear was reinforced by Hardin (1968) and by Olson (1965), who advanced the notion that the only means to overcome the free-rider problem (Olson), and the social dilemma (Hardin), are either through privatization of the resource or through government management.[52] [53] However, advances in non-cooperative game theory, such as Axelrod's (1984) *The Evolution of Cooperation*, demonstrated that not all resource cooperation problems were doomed to the logic of a Prisoner's Dilemma, where rational choices and strategies seeking to maximize individual outcomes lead to non-cooperation.[54] [55] Further analysis has led to the study of situations where resources used by populations have not demonstrated predicted resource depletion, privatization, or active government intervention.

Three watershed studies identifying commonalities among sustainable local Commons institutions are Wade (1988), Ostrom (1990) and Baland and Platteau (1996).[56] Wade's work focuses on data collected from case study analysis of 31 villages in South India, from which he identifies 14 conditions important for the maintenance of sustainable CPR management. Baland and Platteau conducted a synthetic review of a large number of empirical CPR studies to generate 12 conditions which promote successful commons governance and they propose the theory that sustainable cooperation strategies are more likely to occur in commons involving smaller groups of actors. Ostrom lists eight design principles taken from a case study analysis of 14 local CPRs from diverse geographical and cultural locations. All three studies share significant overlap; however both Wade and Baland, and Platteau include external factors, such as importance of residential proximity to the common resource, and social capital, while Ostrom purely focuses on factors pertaining directly to the local CPR governance institution.

In conducting her analysis, Ostrom applied the following criteria in selecting her CPR cases:

1) They are small scale, located entirely in one country, and consist of 50-15,000 dependents.

2) They are renewable.

3) The resource is scarce.

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[52] Hardin, 'The Tragedy of the Commons'.

[53] Olson, *The logic of collective action*.

[54] Ostrom and Keohane, 'Introduction'.

[55] Axelrod, *The Evolution of Cooperation*.

[56] Ostrom, Roy Gardner, and James Walker, *Rules, Games, & Common-Pool Resources*, 46.

4) Users may harm one another but their usage does not have significant impact on external actors.[57]

Additionally, she clearly states that her study was not based on a random sample. She sought out cases which had either a) a long enduring CPR regime, b) a failed CPR regime or c) "transformed existing institutional arrangements".[58]

The following table outlines the results of her study.

Table 2-1.   Design Principles derived from studies of Long-enduring institutions for governing sustainable resources (2005)[59]

Principle	Description
Clearly Defined Boundaries	The boundaries of the resource system (e.g. irrigation system or fishery) and the individuals or households with rights to harvest resource units are clearly defined.
Proportional equivalence between benefits and costs	Rules specifying the amount of resource products that a user is allocated are related to local conditions and to rules requiring labour, materials, and/or money inputs.
Collective-choice arrangements	Many of the individuals affected by the harvesting and protection rules are included in the group who can modify these rules.
Monitoring	Monitors, who actively audit biophysical conditions and user behaviour, are accountable to the users and/or are the users themselves.
Graduated Sanctions	Users who violate rules-in-use are likely to receive graduated sanctions (depending on the seriousness and context of the offense) from other users, from officials accountable to these users, or from both.
Conflict-resolution mechanisms	Users and their officials have rapid access to low-cost local arenas to resolve conflicts among appropriators or between appropriators and officials.
Minimal recognition of rights to organize	The rights of users to devise their own institutions are not challenged by external governmental authorities, and users have long-term tenure rights to the resource.

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[57] Ostrom, *Governing the Commons*, 26.

[58] Ibid, 27.

[59] This is a revised version of Ostrom's 'Design principles illustrated by long-enduring CPR institutions' which first appeared in *Governing the Commons* (1990). The revisions are generally cosmetic and designed in such a way as to convey more clarity.

Principle	Description
Nested enterprises	Appropriation, provision, monitoring, enforcement, conflict resolution, and governance activities are organized in multiple layers of nested enterprises.

Source: Ostrom, Understanding institutional diversity, 259.

The above principles are not intended as a cookbook for actors wishing to design sustainable institutions. Rather, throughout their evolution, sustainable institutions have met most of the principles, while those which have collapsed, or "were performing ineffectively," have not been structured in such a way. These failed institutions would not have satisfied the metric for robustness used by Ostrom, which she defines as institutions which are long-lasting and whose "operational rules had been devised and modified over-time according to a set of collective-choice rules"). [60] [61]

The value of Ostrom's design principles for long-enduring CPR institutions is three-fold. Firstly, these principles have served as a foundation for further research in the field of CPR management, and as a whole they have survived scrutiny and further study by numerous academics.[62] Secondly, they have provided a means for evaluating local CPR regimes and evaluating their weaknesses.[63] Thirdly, they have demonstrated that institutions may successfully modify behaviours in individuals acting rationally in such a way as to maximize both individual and group returns over a long period of time.

6.1 Selected reading

Hardin, Garrett. 'The Tragedy of the Commons'. *Science* 162, Nr. 3859 (1968).

Hardin, Garrett. 'The Tragedy of the Commons'. *The Garrett Hardin Society*, December 13, 1968. http://www.garretthardinsociety.org/articles/art_tragedy_of_the_commons.html.

Ostrom, Elinor. *Governing the Commons: The Evolution of Institutions for Collective Action*. Cambridge University Press, 1990.

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[60] Ostrom, *Governing the Commons*.

[61] Shepsle, „Studying institutions: some lessons from the rational choice approach".

[62] Ostrom dedicates a chapter to highlighting the research conducted on each individual principle since the original publication. At the time of the first publication in 1990, she wrote that she expected that further study would narrow the list of principles down to a core few. This prediction has so far not occurred. Ostrom, *Understanding institutional diversity*, 259-86.

[63] .Ostrom, 'An agenda for the study of institutions', 270-1.

Ostrom, Elinor.. 'Sustainable social-ecological systems: An impossibility'. In *Annual Meetings of the American Association for the Advancement of Science, Science and Technology for Sustainable Well-Being*. Bd. 29, 2007.

7 Social-ecological systems and resilience

Research on social-ecological systems draws from a number of disciplines, including social and environmental sciences, chemistry, physics, economics and math, to better understand the interaction between humans and the bio-physical world. Social systems, or environments engineered by humans, including those dealing with governance, property rights and access to resources, and ecological systems, or self-regulating communities of organisms interacting with one another and their environment, have traditionally been viewed as separate entities. However, the social-ecological systems approach, which views them as integrated systems in which the dynamics of social and ecosystem domains are linked and of similar weight, tries to bridge this gap. It sees social-ecological systems as complex adaptive systems, characterized by multiple equilibrium and self-organization. Examples of such social-ecological systems include: agriculture, fisheries, climate change, natural resource management, and the national economy. To better comprehend the linkages between social and ecological systems, social-ecological systems researchers has developed a number of interesting concepts, including adaptability and resilience.

7.1 Key Concepts

7.1.1 Adaptability

Adaptability refers to "the capacity of actors in a system to manage resilience, either by moving the system toward or away from a threshold that would fundamentally alter the properties of the system, or by altering the underlying features of the stability landscape[64]". In other words, systems that are highly adaptable are able to re-configure themselves without experiencing significant declines in their basic functions. Loss in adaptability can lead to significant restraints during periods of re-organization and renewal.

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[64] 'About RA'.

7.1.2 Social resilience[65] [66]

Resilience is "the capacity of a system to absorb disturbance, undergo change and still retain essentially the same function, structure, identity, and feedbacks"[67]. Therefore, while social resilience is the ability of groups or communities to cope with external stresses and disturbances as a result of social, political and environmental change, ecological resilience is the characteristic of ecosystems to maintain themselves in the face of disturbance. Resilience has three main characteristics: 1) the amount of change the system can undergo without collapsing into a qualitatively different state, 2) the degree to which the system is capable of self-organization, and 3) the system's ability to build and increase its capacity to learn and adapt. One important area of focus among social-ecological systems researchers has been better understanding the link between social and ecological resilience. For example, some evidence seems to support the view that the key to resilience in social-ecological systems is diversity. While biodiversity plays a crucial role by providing functional redundancy, similarly when resources are shared by a diverse group of stakeholders, decision-making can be better informed and there might be more options for testing policies. Active adaptive management whereby management actions are designed as experiments encourages learning and novelty, thus increasing resilience in social-ecological systems. Resilience is also linked to the concepts of vulnerability and criticality. Social vulnerability is the exposure of groups of people or individuals to environmentally induced stress, and encompasses disruption to groups or individuals livelihoods and their forced adaptation to the changing physical environment. Resilience may play an important role in increasing the capacity of social systems to cope with stressors. The concept of environmental criticality, on the other hand, refers to a state of an area or region in which the extent or rate of environmental degradation precludes the continued use of systems or levels of human well being, given a society's capacity to respond. Due to its institutional context, social resilience is defined at the community rather than the individual level, and is therefore related to the social capital of societies and communities.

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[65] 'Resilience'.

[66] Adger, 'Social and ecological resilience'

[67] 'About RA'.

7.2 Selected reading

Adger, W. N. 'Social and ecological resilience: are they related?' *Progress in Human Geography* 24, Nr. 3 (2000): 347.

Olsson, P., C. Folke, and F. Berkes. 'Adaptive co-management for building resilience in social–ecological systems'. *Environmental management* 34, Nr. 1 (2004): 75–90.

8 Theories of organization change

Beginning with Kurt Lewin's stage theory of change, the scientific study and theorizing of organization change has become a flourishing inter-disciplinary research field drawing a great deal of attention from policy-makers, business leaders and civil society organizations alike. At a basic level, an organization is a group of people intentionally organized to accomplish an overall, common goal or set of goals, and represents an integrated social system that uses various inputs or resources to produce its desired outputs[68]. However, with the growth of external pressures, including globalization and technological advances, many organizations have grown more complex and been forced to navigate increasingly precarious environments (Downey 2008). Frequently these pressures require an organization to respond to their environments by changing the way it operates. This change can occur at many levels within an organization, including:

1) *The individual level*: focuses on intrapersonal factors such as motivation, attitudes and beliefs;
2) *The team or workgroup level*: focuses on such elements as communication and role-models; and
3) *The organizational level*: focuses on broader change influences such as culture and environment. [69]

Change also includes a variety of different dimensions, including:

1) *the scope of change*: whether the change takes place organization-wide or at the sub-system level;
2) *transformational vs. incremental change*: whereas transformational change involves changing an organizations fundamental structure or culture, incremental change involves small planned steps that take place over time,

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[68] Butterfoss, Kegler, Francisco, 'Mobilizing organizations for health enhancement', 336.

[69] Butterfoss, Kegler, Francisco, 'Mobilizing organizations for health enhancement', 337.

3) *remedial vs. developmental change*: while remedial change aims to remedy current situations and problems, developmental change is broader in nature and often involves making an effective organization even more so;

4) *reactive vs. proactive change*: reactive change occurs when a sudden event causes a quick and disorganized response, whereas proactive change involves leaders recognizing the need for change and organizing a strategy to accomplish it. [70]

Organizational change models and theories help institutional leaders understand the process of organizational change at a macro-level, by revealing how, why and in what form change will occur, as well as providing ideological assumptions concerning the nature of human beings and social organizations[71]. These organizational change models can be divided into three main categories: 1) *teleological models*: such as action-research and organizational development, 2) *dialectical models*: such as political models and social interaction, and 3) *evolutionary models*: such as systems theory and adaptive models. The inability of these models to address certain criticisms has also led to increased use of social-cognition and cultural models. Of these categories the teleological and evolutionary models are the most prevalent[72]. Influenced by biology, evolutionary models see organizational change as a slow stream of mutations, resting on the fundamental assumption that change is dependent on the unique circumstances, situational variables and the environment faced by the organization. These evolutionary models consider change in complex systems to be essentially deterministic, viewing humans as largely incapable of having more than a minor impact on the nature and direction of change. Accordingly, this approach tends to deemphasize individual human agency and instead focus on "managing" change by responding organically to environmental demands[73]. Teleological models, on the other hand, referred to by several different common names (including scientific management and rational models), see organizational change occurring in a rational or linear fashion, and individual leaders, referred to as change agents, as more instrumental to the process of organizational change. Therefore, internal organization features, as opposed to external environmental factors, are the main drivers of change. Change occurs in an ongoing process of goal formation, implementation, evaluation and modification, with a central focus on the role of change agents in this process, who make use of rational scientific management tools to achieve

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[70] Butterfoss, Kegler, Francisco, 'Mobilizing organizations for health enhancement', 337-8.

[71] ASHE-ERIC.

[72] ASHE-ERIC, 26-7.

[73] ASHE-ERIC, 28-31.

carefully planned goals[74]. The following section will focus on one such teleological model, or approach, referred to as Change Management.

8.1 Change management

Change management is a structured approach to shifting individuals or organizations from the current state to a desired state. In the business sense it is defined as "the process of continually renewing an organization's direction, structure, and capabilities to serve the ever-changing needs of external and internal customers"[75]. It has evolved over the past 50 years to include contributions from psychology, organizational development, engineering, and business. A crucial feature of change management is that it is just one component of a larger change management effort which should include strategy, technology, and business processes[76]. Change management differs from traditional organizational development in regard to the underlying theory and analytical framework, the preferred intervention strategies, and the role of the change agent. See Worren et al.[77] for a comparison of change management and organizational development.

The goal of change management is not to eliminate resistance to change, but to minimize the impact. Within the business world, a study of 400 organizations found that a project was five times more likely to meet its objectives if the project leaders implemented "very good" or "excellent" change management practices (Prosci 2007). The need and the capability for change are identified in order to draft a plan to institute change. After studying over 100 organizations in different industries, Kotter[78] established eight guidelines to using change management to successfully implement change. They are as follows:

1. Establish a sense of urgency

2. Form a powerful guiding coalition

3. Create a vision

4. Communicate the vision

5. Empower others to act on the vision

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[74] ASHE-ERIC, 32-6.

[75] Moran and Brightman, 'Leading organizational change'.

[76] Worren, Ruddle, and Moore, 'From Organizational Development to Change Management'.

[77] Ibid.

[78] Kotter, *Leading change*.

6. Plan for and create short-term wins

7. Consolidate improvements and produce even more change

8. Institutionalize new approaches

Firms that did not succeed in accomplishing their change-related goals often failed to successfully implement one or more of these aspects. Additionally, change usually involves three overlapping aspects: culture, process, and people. Often the emphasis falls on the process of change, but it should involve all three aspects. With respect to environmental issues this may be especially important.

Sirkin et al.[79] identify hard and soft factors in change management. They found that when seeking change, organizations too often focus on the soft factors such as leadership, culture, and motivation which don't have a direct influence on the outcomes of many change programs. Instead, they argue that hard factors, which have the three following characteristics, should receive more of the focus: a) they can be measured, b) their importance can be easily communicated to the target organization or individuals and beyond, and c) they can be influenced quickly.

The Boston Consulting Group has seen a consistent correlation between four hard factors to guide implementation of change management in over 1,000 organizations with the success in the level of change achieved[80]. The first hard factor is project duration; they found that organizations typically shy away from long projects assuming that they are at greater risk for failure, when in reality the data shows that the frequency of performance reviews is the most important thing to consider. The next factor is the performance integrity of the project team, or in the other words, their skill level and ability to implement change. The third factor is the commitment to change displayed by both top management and employees. The final hard factor is the effort by all involved in the change process. Organizations frequently fail to realize or acknowledge the extra workload that may be associated with a change management program for some of those involved. In instances where an individual's workload increases by more than 10 percent, the program is likely to run into trouble.

In summary, change management is a method of achieving change within individuals and organizations that, when implemented effectively, can greatly influence the level of the program's success. A plan with a strong vision that engages committed leaders who take into

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[79] Sirkin, Keenan, and Jackson, 'The hard side of change management'.

[80] Ibid.

account hard factors and look beyond the process to fully integrate people and culture into the plan is most likely to result in the greatest changes.

Change management can be a relevant framework for inciting sustainable behaviours; in fact Pettigrew[81] cited environmental disturbances as the "main precipitating factors" in the growth of strategic change management. The literature focuses on change management within an organizational context. Therefore although the main principles and steps of change management could be employed to induce a change in behaviour in the wider public, implementing change management may be most useful at institutions such as large corporations or universities. For example, the Environmental Association for Universities and Colleges in the UK has undertaken a 'behaviour change management programme' with two pilot institutions to assess different change management practices. In this instance it would undoubtedly be useful to employ certain aspects of change management such as the hard factors described above. Still, Worren et al.[82] describe change management as dedicated to tackling large-scale change, implying that it may be an effective tool for InContext.

8.2 Selected reading

'Special Issue: Understanding and Facilitating Organizational Change in the 21st Century: Recent Research and Conceptualizations.' *ASHE-ERIC Higher Education Report*, 2001.

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Pettigrew, A.M. *The awakening giant: Continuity and change in imperial chemical industries*. London: Blackwell, 1985.

Sirkin, H. L, P. Keenan, und A. Jackson. „The hard side of change management". *Harvard Business Review* 83, Nr. 10 (2005): 108.

Worren, Nicolay A. M., Keith Ruddle, und Karl Moore. „From Organizational Development to Change Management". *The Journal of Applied Behavioral Science* 35, Nr. 3 (1999): 273 -286.

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[81] Pettigrew, *The awakening giant: Continuity and change in imperial chemical industries*.

[82] Worren, Ruddle, and Moore, 'From Organizational Development to Change Management'.

9 Ecological economics

One of the most highly discussed areas of study within sustainability science is ecological economics, a relatively new trans-disciplinary field of study that aims to provide a fundamental critique and improvement of traditional economic theory. Traditional economic theory has viewed the environment as well as its resources and services as subsets of a larger economic system. Ecological economists argue that this world-view has led to distorted economic policies centred on unsustainable economic growth with total disregard of the earth's carrying capacity and critical societal distributional and justice issues. As a result, ecological economics aims at challenging the prevailing economic paradigm and attempts to reverse its conceptual framing by viewing the earth's natural systems as the foundation of the economy, arguing that both humans and the economy are reliant on and bounded by ecosystems and finite resources. Ecological economists are, therefore, particularly interested in finding ways of keeping the 'scale' of the global economy, or the level of resource use and waste production of economic activity, within the capacity of the earth's ability to sustain it. By integrating such elements as natural systems, environmental ethics and human well-being, ecological economics aims at developing a more complete economic theory that allows for a deeper understanding of the linkages between human and natural systems in order to develop more effective policies capable of addressing these issues, while also improving or maintaining quality of life.

While ecological economics' most fundamental contribution so far has been related to this broader reframing of economics, one of the more specific contribution of ecological economics thus far has been developing a more expansive view of the foundations of the economy. Whereas conventional economics focuses primarily on goods and services produced by human industries, ecological economics takes a broader perspective to consider additional elements that contribute to individual and collective well-being. These are[83]:

- Built Capital: manufactured goods such as tools, equipment, buildings.
- Human capital: knowledge and information stored in our brains as well as labour.
- Social Capital: networks and norms that facilitate cooperative action.
- Natural Capital: renewable and non-renewable goods and services provided by ecosystems.

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[83] Costanza et al., 'Quality of life', 271.

Using these new categories ecological economists have tried to develop new indicators of how the 'real' economy is faring, in order to achieve true economic efficiency. This means including all relevant costs and benefits in prices required for assuring sustainability. As of now, most of these efforts have been focused on the macroeconomic level, in particular relating to the pursuit of alternatives to GDP, which focuses nearly exclusively on built capital. However, contributions from such diverse fields as psychology, sociology, economics, medicine, political philosophy and neuroscience, are increasingly expanding the reach of ecological economics, including a greater focus on governance issues.

9.1 Selected reading

Costanza, R. *Ecological economics.* Columbia University Press New York, 1991.

Costanza, R., B. Fisher, S. Ali, C. Beer, L. Bond, R. Boumans, N. L Danigelis, et al. 'Quality of life: An approach integrating opportunities, human needs, and subjective well-being'. *Ecological economics* 61, Nr. 2-3 (2007): 267–276.

Costanza, Robert, John H Cumberland, Herman Daly, Robert Goodland, and Richard B Norgaard. *An Introduction to Ecological Economics.* 1. Aufl. Boca Raton, FL: St. Lucie Press, 1997.

10 Sociology

Sociology is the scientific study of social life, social change and human social behaviour. It examines the ways in which different forms of social structure, such as groups, organizations, communities and social categories, and various social institutions, including economic, social, political and religious ones, affect human attitudes, actions and opportunities. Subject matter dealt with by sociology ranges from the micro level of agency and interaction to the macro level of systems and social structures. In fact, few fields have such a broad scope of research and theory. This diversity of perspective allows sociological research techniques to be applied to virtually any aspect of social life, to explore how both individuals and collectivities construct, maintain and alter social organization in various ways. However, sociological theory is particularly relevant for the study of human behavioural change on account of its general orientation towards the macro level and the development of integrated theories that bridge the agency-structure divide. This orientation stands in contrast with much of the behavioural research in social-psychology, which tends to be oriented towards the micro-level.

10.1 Key Topics

10.1.1 Structuration and social practices[84] [85]

Structuration theory was developed in order to go beyond the traditional internalist-externalist dichotomy in social sciences (also known as the dichotomy between agency and structure) to create an integrative theory of human behaviour. The best known structuration theory is the one developed by sociologist Anthony Giddens (1984). Giddens theory builds on the proposition that individual subjectivity is mediated through social interaction. Social interaction is what gives individuals access to language, intersubjective interpretation, meaning and knowledge. Only by being embroiled in the social world of others, with whom they can reliably interact, can people achieve 'ontological security'. This ontological security provides for a continuing sense of the 'well-foundedness of reality'[86]. From the perspective of understanding consumption behaviours, one of the most important elements in structuration theory is a distinction between 'practical' and 'discursive' consciousness. Practical consciousness is the everyday knowledge that people have about how to do things. It is this practical consciousness which allows me to identify the whereabouts of the rubbish bin faultlessly (until it is moved), drive to work without noticing that I have stopped at the lights, and respond effortlessly to many of the trivial tasks that fill my everyday life. Most of this kind of action appears to take place without any recourse to premeditation or conscious, deliberative reasoning. Giddens suggests that the bulk of human agency rests in using this practical consciousness. At the same time, human agency is also characterised by the ability to engage in such reasoning, for example, when asked to expand upon the underlying reasons for (even routine) action. This 'discursive consciousness' consists in everything that actors are able to say about the social conditions of their action. However, this kind of consciousness does not necessarily describe a process of continual rational deliberation over individual actions. On the contrary, according to Giddens, accounts of intention are generally produced during or after action, rather than before it. The distinction between practical and discursive consciousness has some important implications in terms of motivating pro-environmental behaviour. For example, Spaargaren and van Vliet (2000) have suggested a model of consumption, in which shifting consumption patterns requires us to 'raise' routine behaviours from the level of practical consciousness to discursive consciousness. This discursive process is seen as involving a social exploration of new

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[84]   Spaargaren, 'Sustainable consumption'.

[85]   Jackson, *Motivating Sustainable Consumption*.

[86] Ibid.

alternatives at the group or community level. One of Spaargaren's central arguments is that environmental sociologists need to conceptualize sustainable consumption behaviour, lifestyles and daily routines in such a way as to avoid the pitfalls of many of the so called micro approaches that have been developed to date. The Social Practices approach to Sustainable Consumption research is, therefore, motivated by the goal of placing a greater emphasis on consumption issues without lapsing into the socio-psychological models that have long been used in analyzing pro-environmental behaviours. Instead they apply structuration theory to provide a sociological, 'contextual' approach to analyzing consumption behaviours and lifestyles. The model differs from the Attitude-behaviour model in some crucial respects: 1) the centre of the model is not the individual attitude or norm, but rather the actual behavioural practices, situated in time and space, that an individual shares with other human agents, 2) the model does not focus on specific, isolated behavioural items, but rather looks into the possibilities for designated groups of actors to reduce the overall environmental impacts of their normal daily routines, 3) the model analyzes the deliberate achievements of knowledgeable and capable agents who make use of the possibilities offered to them in the context of specific systems of provision. According to Spaargaren there are three consequences of working with this model. First, the social practices model implies the end of the individual as the central unit of analysis, as human agency is analyzed in terms of the twin concepts of lifestyles and social practices, a lifestyle being defined by Giddens as "the set of social practices that an individual embraces, together with the storytelling that goes along with it". Therefore, unlike the concept of a pro-environmental attitude, which can be measured along one dimension or scale, Green lifestyles are composed of various segments or sectors that can vary considerably among themselves. Second, working with the social practices model, it is necessary to reformulate most of the existing targets in environmental policy-making and develop environmental heuristics for the use of citizen-consumers, such as the practice of labelling. Finally, the individual responsibility for environmental social change is analyzed in direct relation with social structure, which allows for a greater emphasis on social structure's enabling and prohibitive aspects.

10.1.2 Diffusion of innovations [87]

The history of innovations, defined as an idea, behaviour or object that is perceived as new by its audience, teaches us that it usually takes far too long for proven concepts and

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[87] Oldenburg and Glanz, 'Diffusion of Innovations'.

programs to become part of practice. Developed by sociologist Everett Rogers, the Diffusion of Innovations approach seeks to explain how innovations are taken up in a population and, therefore, provides valuable insights into the process of social change. Diffusion is defined as the process by which an innovation is communicated through certain channels over time among the members of a social system. Diffusion differs from the similar concept of dissemination, defined as planned, systematic efforts designed to make a program or innovation more widely available to a target audience or members of a social system. This diffusion process takes place in distinct consecutive steps: 1) *innovation development*: all of the decisions and activities that occur from an early stage of an idea to its development and production; 2) *adoption*: uptake of the program or innovation by the target audience; 3) *implementation*: the active, planned efforts to implement an innovation within a defined setting; 4) *maintenance*: the ongoing use of an innovation over time; 5) *sustainability*: the degree to which an innovation or program of change continues after initial resources are expended; 6) *institutionalization*: incorporation of the program into the routines of an organization or broader policy and legislation. A key premise of the model is that some innovations diffuse quickly and widely, while others are weakly or never adopted, and others are adopted but subsequently abandoned. Three groups of variables are used to explain the different outcomes: 1) characteristics of the innovation, 2) characteristics of the adopters, and 3) features of the setting or environmental context. According to Rogers, the core attributes of innovations are: 1) *relative advantage* – the innovation must be better than the idea, project or program that it supersedes; 2) *compatibility* – innovations are more likely to be adopted if they are compatible with the users values, norms, beliefs and perceived needs; 3) *complexity* – complex innovations are less likely to be adopted than those that are easy to use; 4) *trialability* – innovations with which users can experiment on a limited basis are more successful; 5) *observability* – innovations are more likely to be adopted if they are visible and easily identified. As for the process of adoption by individuals, Rogers describes it as a normal bell-shaped curve with 5 adopter categories: 1) innovators, 2) early adopters, 3) early majority adopters, 4) late majority adopters, and 5) laggards. Finally, innovations may be disseminated successfully in some setting, but not in others. Many different features of setting and organizations can influence the diffusion process, including: 1) geographical settings, 2) societal culture, 3) political conditions, and 4) globalization and uniformity. Taking account of these three groups of variables is particularly critical in the dissemination process, in which the intervention can be designed with target population and setting in mind.

10.1.3 Grassroots innovation

One novel approach to studying innovation, which holds particular relevance for the study of innovation in participatory processes and towards sustainable development, is that of

grassroots innovation. Grassroots innovation refers to "innovative networks of activists and organisations that lead bottom-up solutions for sustainable development: solutions that respond to the local situation and the interests and values of the communities involved[88]". As such, grassroots innovation can take a variety of different forms, such as low-carbon housing, organic farming cooperatives, furniture recycling projects, to name a few that have been studied. The study of grassroots innovation emerged as a response to the perceived neglect of the grassroots as an important site of innovation for sustainability. Eco-innovations, or innovations aimed at decreasing negative influences on the natural environment, have been a subject of considerable scholarly interest for some time[89], however, most studies have focused on the greening of mainstream business, as opposed to the role of civil society and participatory processes. Accordingly, eco-innovation studies have mainly focused on innovations related to the market economy, on the level of the firm and in the form of technological developments. While acknowledging the important role of green technological innovations in meeting the challenge of transitioning to a more sustainable society, researchers of grassroots innovations argue that production technologies alone will not be enough to achieve such a transition and suggest that civil society movements may play a critical role in sustainability transitions due to their ability to develop innovative social practices. The study of grassroots innovations, therefore, focuses on innovations to the social economy in all of its heterogeneous institutional forms, and is primarily interested in studying innovations of a social nature[90].

Most literature on grassroots innovations focuses on the role of social innovations in relation to broader socio-technical systems, adopting a multi-level framework of socio-technical niches, regimes, landscapes[91]. Drawing on strategic niche management theory, a particular focus of grassroots innovations literature has been the role of community-level activities as innovative niches and their ability to influence socio-technical regimes. More specifically, how socio-technical niches emerge and become sufficiently powerful to challenge and overthrow dominant regimes, resulting in transition. As changes to socio-technical regimes tend to be incremental and path dependent, niche situations provide space for innovative ideas and practices to develop without being exposed to the same selection pressures bearing upon

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[88] Gill Seyfang and Adrian Smith, *Community action: a neglected site of innovation for sustainable development*, 1.

[89] Reid and Miedzinski, 'Eco-innovation'.

[90] Gill Seyfang and Adrian Smith, *Community action: a neglected site of innovation for sustainable development*, 7-9.

[91] For more information regarding this multi-level approach to studying socio-technical systems see section 10 on Transition Theory.

the incumbent, mainstream regime[92]. In other words, niches are spaces where the "rules are different", and which combined with participatory processes and social learning can result in innovative new practices. Grassroots innovations literature, therefore, argues that green niches can serve as sustainability experiments that produce alternative practices, from which important lessons and innovative ideas for sustainability can be drawn.

Another focus of grassroots innovation literature has been the role of social movements as actors in promoting social innovation. According to grassroots innovation literature social movements will be of vital importance in a transition to sustainability, as the changing values, lifestyles, and cultural norms associated with behavioural change will be modulated through social contexts, including social movements[93]. Grassroots innovation draws on new social movement theory to model social movements as agents of change within socio-technical systems that can influence a socio-technical regime by: 1) replication of their activities, 2) growth in scale to expand their influence, 3) translation of their ideas to mainstream settings[94]. In other words, sustainability transitions are seen as involving civil society-based social movements that develop innovative social practices and help produce change in society by 1) diffusing their innovative ideas and practices, 2) unsettling the regime, and 3) creating general landscape-level cultural trends that can promote regime changes[95]. One interesting case study of such a social movement leading to the development of innovative ideas and practices to influence sustainability is the transition town movement. Originating in the UK, the transition town movement aims at mobilising community action and fostering public empowerment and engagement around climate change, with the objective of preparing for a transition to a low-carbon economy[96]. As of today the transition towns have been very successful at replication, spreading rapidly around the UK and further afield, but less successful at scaling up and translation.

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[92] Gill Seyfang and Adrian Smith, *Community action: a neglected site of innovation for sustainable development*, 5.

[93] Gill Seyfang et al., *Energy and communities in transition – towards a new research agenda on agency and civil society in sustainability transitions*, 4.

[94] Ibid., 5.

[95] Ibid., 6.

[96] Gill Seyfang and Alex Haxeltine, *Growing grassroots innovations: Exploring the role of community-based social movements for sustainable energy transitions*.

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Spaargaren, G. 'Sustainable consumption: a theoretical and environmental policy perspective'. *Society & Natural Resources* 16, Nr. 8 (2003): 687–701.

11 Transitions theory [97]

Transitions theory is a framework for finding solutions to persistent and complex societal problems. It is built on the premise that resolving these problems will involve long-term processes of structural transformation in which a society or subsystem of society fundamentally changes. These changes take place through system innovations, which fundamentally change the structure of the system and the relations between the participants. The concept of transition, which comes from an integrated systems perspective, can be defined as a shift in a system from one dynamic equilibrium to another, and is marked by a highly non-linear process of change. Slow change can be followed by rapid change in a multi-level process that involves the co-evolution of different subsystems, leading to irreversible patterns of change. According to the transition framework, transitions take place in the following stages: 1) *pre-development* – in which there is little visible change at the systems level, but experimentation at the individual level; 2) *take-off* – in which the change starts to build up and the system begins to shift; 3) *acceleration* – where visible structural changes take place in the form of socio-cultural economic, ecological and institutional changes; and 4) *stabilization* – in which rapid change gives way to a new dynamic equilibrium. It is also a multi-level concept, which distinguishes between niches, regime and the socio-technical landscape at three interacting scale levels: the micro-, meso- and macro-

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[97] Loorbach and Rotmans, 'Managing transitions for sustainable development'.

level. While each transition is different, one can generally distinguish between two types: 1) *evolutionary transitions* – in which the outcome has not been planned and 2) *goal oriented transitions* – in which public and private actors are guided by goals or visions of an end state.

11.1 Transition management[98] [99]

Whereas transition theory refers to the general study of social transitions, transition management can be described as a new governance-model aimed at facilitating and directing processes of societal change in the direction of sustainability. Transition management aims not at managing these transitions in terms of command control, but rather in terms of influencing and adjusting. This is a subtle, evolutionary way of steering in which the direction and pace of transformations can be influenced but not directly controlled. Governance is understood in a broad sense of how social innovations interact with the dominant regimes. Therefore, in the context of participative processes such as InContext's community arena, for example it represents a continuous process of experimenting and learning, as opposed to governance with fixed goals and means.

The distinct stages of transition management are captured in the following transition management cycle:

1) Structure the problem in question and establish and organize the transition arena.

2) Develop a transition agenda, images of sustainability and derive the necessary transition paths.

3) Establish and carry out transition experiments and mobilize the resulting transition networks.

4) Monitor, evaluate and learn lesson from the transition experiments, leading to adjustments in the vision, agenda and coalitions[100].

Moreover, societal transitions are marked by four different types of actor behaviour: 1) strategic activities– relating to complex societal problems and creating alternative futures, 2) tactical activities – related to building up and breaking down system structures,

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[98] Loorbach, „Transition Management for Sustainable Development".

[99] Loorbach and Rotmans, „The practice of transition management".

[100] Loorbach, *Transition Management: New Mode of Governance for Sustainable Development*.

3) operational – related to short-term and everyday decisions and actions, and 4) reflexive – related to the evaluation of the existing situation at variations and their interrelation or misfit[101].

11.2 Transition arena and experiments

Transition management is a form of participative governance that aims at creating societal movements that allow for pressuring the political and market arenas to safeguard the long-term orientation and goals of the transition process[102]. The vehicle for this process is the transition arena. The transition arena is strategic social network of frontrunners from different backgrounds that engage in an evolving process of innovation through a highly interactive process of dialogue and problem solving. After reaching a common perception of the transition issue to be dealt with, participants in the transition arena engage in envisioning and scenario development exercises in order to generate visions and basic principles for a sustainable future related to the issue in question. These visions, which are necessarily different that the expectations and visions of regime actors, serve to challenge the dominant regime and establish a fundamental debate about future development, the necessity of fundamental change and possibilities of how to achieve such a transition[103]. The transition arena, therefore, serves as an instrument for enabling a self-organizing and self-steering participatory process leading to a long-term orientation and short-term experiments supporting it. These short-term experiments are referred to as transition experiments, which represent innovative projects addressing a societal challenge, that aim at facilitating societal transitions through social learning. Transition experiments do not, however, represent a goal in itself, but rather a transition arena instrument for fostering social innovation through social learning.

11.3 Backcasting[104]

Coined by John Robinson in the 1970s, backcasting describes an approach to futures studies involving the development of normative scenarios "aimed at exploring the feasibility

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[101] See InContext Deliverable 4.1 – The Community Arena: a co-creation tool for sustainable behavior by local communities.

[102] Wittmayer et al., 'The Community Arena: Application of transition governance in local communities', 4-5.

[103] See InContext Deliverable 4.1 – The Community Arena: a co-creation tool for sustainable behavior by local communities.

[104] Quist, *Backcasting for a sustainable future.*

and implications of achieving certain desired end-points"[105]. Differing from forecasting studies, which aim to project the most likely future conditions, backcasting acknowledges the fundamental uncertainty about future events stemming from lack of knowledge, the unpredictable nature of innovation and surprise, and the intentionality of human decision-making, while also focusing explicitly on normative goals such as desirability and feasibility. Backcasting works by developing a vision of a desirable future end-point or set of goals, and then working back to assess the physical feasibility of achieving these goals and develop policy measures to achieve them[106]. While initially applied in energy studies, sustainability planning and the development of sustainable organizations, since the 1990s backcasting has been developed into an increasingly popular participatory approach, referred to as participatory backcasting[107]. Participatory backcasting has an increasingly sophisticated methodology and consists of three key elements: 1) stakeholder involvement and dialogue, 2) participatory generation of desirable future visions, and 3) stakeholder learning[108]. In addition to having similar processes to transition management and seeing a critical role for envisioning, participatory backcasting's early literature in fact served an inspiration for the development of transition management. However, there are some critical differences between these approaches. Fundamentally, in contrast to participatory backcasting, transition management always emphasizes the governance and management aspect of transitions, including follow up activities to the envisioning process. Backcasting is therefore understood as a single step in the transition management process as opposed to a fully fledged methodological approach[109]. Moreover, transition management features less methodological and theoretical diversity than participatory backcasting as it is firmly rooted in transition theory and the transition management process.

11.4 Selected reading

Loorbach, D. 'Transition Management for Sustainable Development: A Prescriptive, Complexity-Based Governance Framework'. *Governance* 23, Nr. 1 (2010): 161–183.

Loorbach, D., and J. Rotmans. 'Managing transitions for sustainable development'. *Understanding Industrial Transformation* (2006): 187–206.

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[105] Robinson, 'Future subjunctive', 841.

[106] Ibid, 842.

[107] Wittmayer u. a., „The Community Arena: Application of transition governance in local communities", 8.

[108] Ibid, 9.

[109] Ibid, 11.

Loorbach, D., and J. Rotmans. 'The practice of transition management: Examples and lessons from four distinct cases'. *Futures* 42, Nr. 3 (2010): 237–246.

Quist, J. *Backcasting for a sustainable future: the impact after 10 years*. Eburon Uitgeverij BV, 2007.

Robinson, J. 'Future subjunctive: backcasting as social learning'. *Futures* 35, Nr. 8 (2003): 839–856.

12 Reflection of common approach

The common approach includes the project's objectives, core thesis, central research questions, as well as its broader conceptual foundations. It aims at presenting an integrative theoretical framing of internal and external contexts influencing sustainable behaviour in order to explain their central characteristics and mutual interplay. This aim is pursued by offering theoretical reflections on three different levels. **First**, it provides a specific theory of individual behaviour that attempts to integrate factors related to both the individual inner context and the collective inner context. **Second**, it provides a model for reflecting the influence of transition processes on individual behaviour towards sustainability. And **third**, it provides first reflections on the interplay between small groups and larger societal structures (the outer context structures). See Annex A for a summary of the common approach's individual level model of behaviour, and Annex B for the model of individual and group level change processes, including their graphic representations.

Throughout the common approach, numerous open theoretical and conceptual questions are both acknowledged and at times discussed[110]. In this section we reflect whether evidence from the research survey supports the approach and identify aspects that could supplement the approach with insights gained from the research survey. This reflection should serve as a stimulus for further conceptual and theoretical development and refinement.

12.1 Including habits and emotions in the model

With multidimensional psychological models incorporated in the common approach's model of individual behaviour we find many of the core elements of the psychological research explored in the research survey already integrated into the common approach (See Figure 1). Most notably, the common approach's individual model of behavioural change is rooted in

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[110] See pgs. 31-2 of the Common Approach.

the theory of planned behaviour's assumption that behavioural intentions are the immediate antecedents to behaviour and emerge from the salient information and beliefs people hold, as well as the influence of attitudes and subjective norms. The theory of planned behaviour is a highly regarded theoretical model that has been proven applicable in a wide variety of contexts. Some have even gone as far as to call it a general theory of behavioural change. By adopting the theory of planned behaviour the individual model of the common approach must, however, also face some of the same criticisms made of this approach. This includes the criticism that the model may present an oversimplified view of human behaviour. As the model only attempts to explain intentional behaviour, it does not consider elements of unconscious behaviour, such as habit, emotion and some elements of social influence central to the model[111]. Therefore, while the importance and potential benefit of including these elements of behaviour are acknowledged in the conceptual background of the common approach, the common approach's model of individual behaviour is unable to explain the mitigating role of an individual's unconscious behaviour. However, numerous areas of research reviewed in the research survey, in particular neuroscience, behavioural economics, as well as some areas of psychology (social influence, theory of interpersonal behaviour) suggest that including these unconscious elements is critical for understanding human behaviour.

One reason for this omission is pragmatic. Integrating these unconscious factors into the model of individual behaviour would add a significant amount of theoretical complexity. The choice of omitting these factors is however also rooted in theoretical considerations. The theory of interpersonal behaviour is an intrapersonal psychological behavioural model looking at specific, isolated behavioural items. Consequently, including it in the common approach's model of individual behaviour would represent a departure from efforts to provide a greater role for social practice theory in explaining sustainable behaviour. As the common approach points out, "practice theory moves the attention from the individualized and singularized consumption of goods and services to social practices as central aspects when trying to understand consumption patterns […] when seeing behaviour as a practice, changing market behaviour involves the inner collective context to a larger extent than when seeing it as individual, rational, singular decisions"[112]. Therefore, in the case of InContext raising community arena participants' awareness of their needs and strategies to address them through a social exploration of new alternatives at the community level is more important for explaining behaviour than individual elements of unconscious behavior

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[111] See pg. 21 of the Common Approach.

[112] See pg. 16 of the Common Approach.

influencing singular behavioural acts. Social practices are viewed as conscious acts that emerge from a co-evolutionary process between inner and outer contextual factors. While this process is adequately captured in the dual feedback loops of the common approach's model of individual behaviour, the current model fails to explain through which causal chain unconscious behavioural determinants are translated into intentional behaviour. Taking this into account, we have identified two potential changes to the common approach's model of individual behaviour that would allow us to better integrate these considerations:

1. *Integrate elements of the theory of interpersonal behaviour into the model, including social factors, habits and affect, perhaps as a substitute for the motivation-opportunity-ability model currently incorporated in the model.* Including factors currently unaccounted for in the common approach's model of individual behaviour has the potential of providing the model with additional explanatory power. For example, one study of student car use showed that adding elements of the theory of interpersonal behaviour was able to significantly increase the explanatory power of both the theory of planned behaviour and the value-belief-norm model[113]. These additions could, however, lead to the model becoming significantly more convoluted.

2. *Make the influence of unconscious behaviour on behavioural strategies more explicit.* This omission could, for example, be addressed by expanding the motivation-opportunity-ability model that is already included in the common approach's individual model of behaviour. The 'ability' concept of the motivation-opportunity-ability model was initially conceived as recognizing and incorporating the importance of habit as an independent factor influencing behaviour and as a moderator of intention[114]. Moreover, emotion could be described as emanating from needs and then moderating intentions through or by bypassing motivation. Incorporating the role of habit and emotion as inner contextual factors and making the role of social influence as an outer contextual factor more explicit would make the relations between these various processes clearer, thereby increasing the explanatory power of the model.

12.2 Making change last: considering relapse

A core assumption of InContext is that individuals that are more aware of their needs will be more likely to behave sustainably. In turn the common approach assumes: 1) the development of individual awareness and intrinsic empowerment will enhance capability sets

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[113] Bamberg and Schmidt, 'Incentives, Morality, Or Habit?'.

[114] Jackson, *Motivating Sustainable Consumption*, 96.

for individual behaviour, and 2) development of a shared sustainability awareness and culture expressed in a group vision, agenda and language will support individual sustainable behaviour[115]. The transition to greater sustainability is, therefore, to be facilitated through a transition management process, referred to as a community arena, in which participants are helped to achieve greater awareness of their needs as well as those of others. This greater level of awareness is to take place through self-reflection and social learning processes aimed at achieving second-order (aka. double loop) learning involving "a lasting change in the interpretive frames (belief systems, cognitive frameworks, etc.) of an actor"[116].

In an effort to depict these individual and collective change processes within the community arena, the common approach includes a linear model (See Figure 2). According to the model, this change begins with the intervention, leads to individual and group level change processes and results in innovative and more sustainable collective action/behaviour. As such it closely represents Kurt Lewin's unfreezing, changing and refreezing model of change in that this transition process leads 1) to unlearning a particular way of thinking by removing restraining forces (unfreezing), 2) a restructuring of thoughts, perceptions, feelings and attitudes through social learning and self-reflection about individual and collective needs (changing), and 3) ultimately a new quasi-stationary equilibrium through the adoption of new behavioural strategies and the creation of new social norms (refreezing). However, insights from the research survey indicate that the path to "lasting change in interpretive frames" is likely to take a less linear path than is currently acknowledged in the common approach. While the model as it is currently defined may lead to a new quasi-stationary equilibrium in which sustainable strategies are more prevalent among members of the community, there is little that guarantees that those same members will maintain or stabilize those behavioural strategies, or even their awareness of their and others needs. In other words, while the transition process may lead to the adoption or envisioning of more sustainable strategies, it cannot guarantee the sustainability of the collective or individual transition.

This depiction of individual and collective change processes diverges strongly from the non-linear processes of dynamic change captured in transition theory for long-term structural transformations involving a multilevel co-evolution of different subsystems, as well as the transition management iterative cycle of change model and assumptions related to the process of social learning. Therefore, while we speak of sustainability and a lasting change in interpretive frames, we must recognize the potential for collective and individual setbacks or relapse.

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[115] See pg. 27 of the Common Approach.

[116] See pg. 23 of the Common Approach.

One way of integrating these considerations into the common approach's model of individual and collective change processes within the community arena would be to include separate individual and collective stages of change models. Interesting examples include the trans-theoretical model of behavioural change for individual-level change processes and the diffusion of innovations model on the group-level, which both better depict this cyclical or spiral pattern of change (See boxes 1 and 2).

Box 1. Stages of change in trans-theoretical model of behavioural change

1. *Pre-contemplation*: In this stage the individual does not yet intend to change his behaviour in the foreseeable future.

2. *Contemplation*: At this stage the individual becomes aware of the problem and begins seriously considering taking action to address the problem.

3. *Preparation*: This stage involves both the intention of the individual to change and some minor action, largely met with limited success.

4. *Action*: In the action stage, the individual has actually changed their behaviour to overcome challenges or become consistent with their goals, but for a relatively brief period of time.

5. *Maintenance*: In the maintenance stage, the individual consolidates gains and takes steps to prevent relapse.

6. *Termination*: Having reached the termination stage, the individual no longer has the temptation to relapse and has 100% confidence in their ability to continue performing the behaviour.

Box 2. Stages of change in diffusion of innovations model

1. *Innovation development*: all of the decisions and activities that occur from an early stage of an idea to its development and production;

2. *Adoption*: uptake of the program or innovation by the target audience;

3. *Implementation*: the active, planned efforts to implement an innovation within a defined setting;

4. *Maintenance*: the ongoing use of an innovation over time;

5. *Sustainability*: the degree to which an innovation or program of change continues after initial resources are expended;

6. *Institutionalisation*: incorporation of the program into the routines of an organisation or broader policy and legislation.

Viewed through the lens of the trans-theoretical model it is conceivable that, on an individual-level, participants in the community arena will reach what the trans-theoretical model terms an action or temporary maintenance phase, without ever reaching a termination stage of behavioural change. In other words, it is possible that a greater awareness of individual and collective needs will lead to a change in behaviour, but not one that is substantial enough to prevent relapse into old routines and practices. On the collective level, on the other hand, the diffusion model indicates that while the successfully completed community arena process

within the scope of the pilot projects will clearly lead to the implementation stage of diffusion, it is not necessarily guaranteed any measure of maintenance, sustainability or institutionalization, regardless of the way in which sustainability is defined by the individual community. Including elements of these two stages of change models within the common approach's model of inner and collective change processes within the community arena would potentially better represent the change processes needed for truly sustainable communities in the sense of having reached a new dynamic equilibrium or refreezing of change. Put together they may also help in devising criteria for measuring the outcomes of the pilot projects. For example, one could argue that for a community to be considered more sustainable as a result of the community arena process, individuals within the community must have reached a termination change at the individual-level in terms of having achieved a greater awareness of their needs and the needs of others in the community. The collective level, on the other hand, would require diffusion of the innovations of the shared action plan developed in the community arena process at least to the level of *sustainability* and ideally *institutionalisation*.

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Annex A. Common approach model of individual behaviour

Figure 1: Aspects influencing individual behaviour
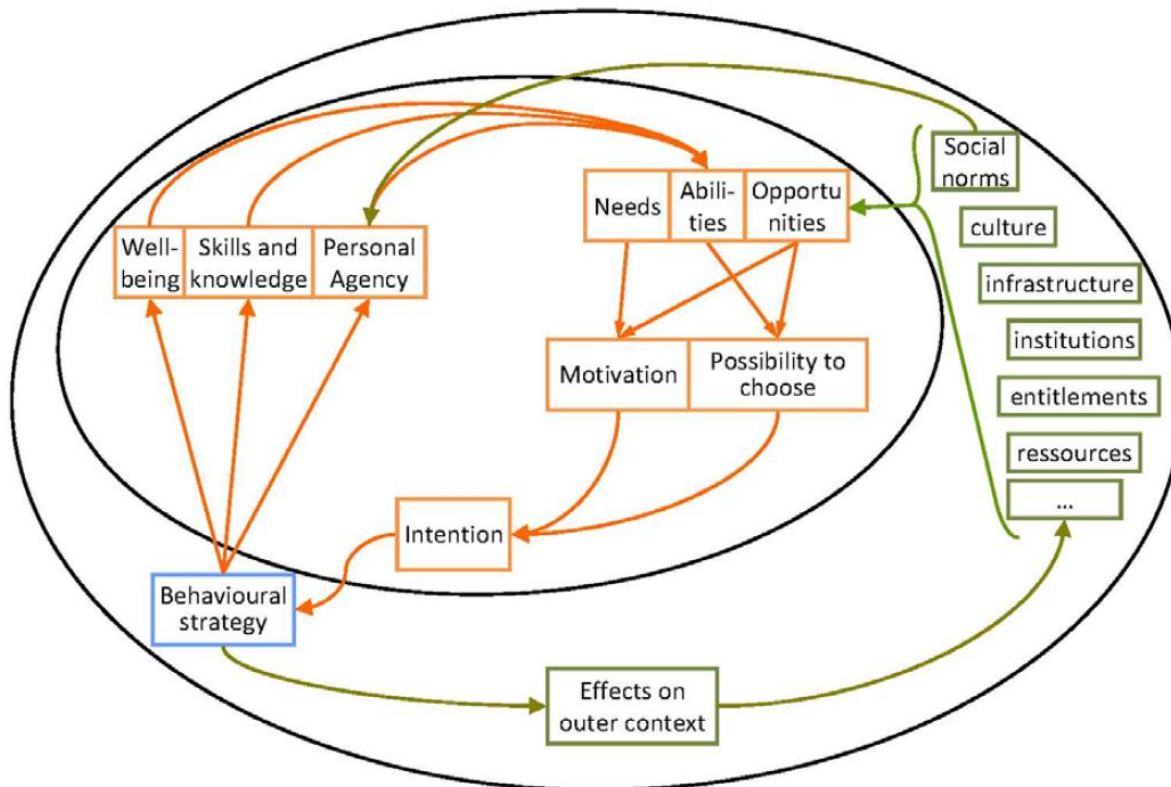
Caption: inner individual context: orange, outer individual context: blue, collective context: green

Source: Common Approach, pg. 20.

The model in figure 1 of the common approach is largely based on the needs-abilities-opportunities (NAO) model and work from poverty reduction, which has combined the concept of capabilities with the theory of planned behaviour. The aim of this approach is to combine multidimensional psychological models of behaviour. In the model two concentric circles distinguish between the internal and external contexts influencing behaviour. In the external context we see the previously identified outer context structural elements such as institutions, culture, social norms, entitlements and resources, whereas in the internal context we see elements of the multidimensional psychological models mentioned above. The conceptual foundations of this model are the distinction between the needs and well-being of a person, the strategies he or she is able to apply in order to meet those needs and realize well-being, and the outer contextual factors which allow for, encourage, discourage, or prohibit these strategies. Particular focus is also placed on capability-sets, or the space available for a person to meet his or her needs, which are co-determined by the outer-context and the specific personal ability of the individual (in the model – well-being, skills and

knowledge, and personal agency), and in turn are affected by numerous behavioural drivers and barriers[117]. The model centres on behavioural strategies, as the main factor needing to be explained[118]. These in turn are determined by the intention of a person to behave in a certain way. The focus is therefore on behaviour as a conscious act. Behavioural routines, emotions and habits are not part of the model in as far as they are not the result of external context elements such as social norms, culture and institutions. Behavioural intentions depend on a) awareness of needs and strategies to meet the needs, a) the perceived possibility to choose a strategy, which is viewed as synonymous with capabilities, and b) the motivation of the individual, which is fuelled by individual needs and perceived abilities[119]. Interplay between the inner and outer context is seen as emerging from two feed-back processes: 1) an inner feed-back loop emerges from the experiences made with behavioural strategies and their effects on an individual's personal abilities through intrinsic empowerment, and 2) behavioural strategies can also impact the outer context through a co-evolutionary process, which may be facilitated through transition processes[120].

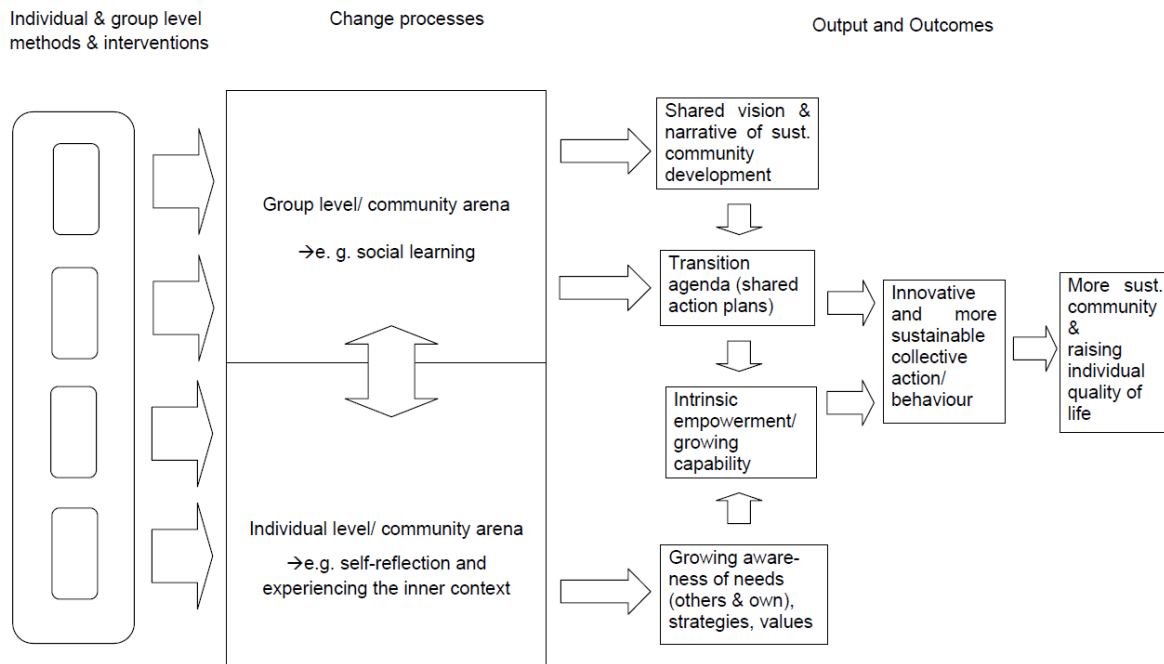[117] See pg. 19 of the Common Approach.

[118] See pg. 21 of the Common Approach.

[119] See pgs. 21-22 of the Common Approach.

[120] See pg. 22 of the Common Approach.

Annex B. Common approach model of individual and group level change processes

Figure 2: Linear model of individual and collective change processes within the community arena

Source: Common Approach, pg. 28.

The second part of the common approach focuses on developing a conceptual basis for understanding how transition processes can be harnessed to influence individual and collective behaviour towards sustainability. At the centre of this conceptual formulation is a linear model of inner and collective change processes within the community arena seen in figure 2. As indicated in the model of individual behaviour, this change is expected to take place by influencing elements of people's motivation and capabilities regarding their behavioural intentions[121]. The aim of using the community arena is to identify individual and collective needs through collective reflection, and back and forecasting, distinguish these from behavioural strategies, and ideally produce a feeling of self-efficacy[122]. The common approach rests on the assumption that as people engage in discourse with other members of their community they will become more aware of their own needs, the needs of others, and the relation between their needs and strategies. This collective reflection will lead them to

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[121] See pg. 23 of the Common Approach.

[122] See pg. 24 of the Common Approach.

choose new strategies that will allow them to fulfil more of their individual and collective needs simultaneously[123]. In other words, this participatory process is to lead to a form of social learning that goes beyond the acquisition and integration of new knowledge within old cognitive frameworks to reach a stage of second-order learning (aka. double loop learning). Second-order learning implies changes to the underlying values and assumptions of the individual, thereby leading to lasting change in their interpretive frames[124]. This social learning process involves an individual's self-reflection on their own personal needs and values as the motivational force behind actions, but is also, as the name indicates, inherently a social process as it takes place within the social setting of the community arena[125]. The community arena, which can be understood as (a) a participatory fora to determine lists of functionings that should be achieved (b) a fora to discuss, elaborate, and mutually strengthen individual and joint commitments, and (c) a policy tool to enhance individual capability, aims to "open communicative space" allowing people to learn and reflect[126]. Accordingly, the community arena represents a series of interventions at 1) the individual and 2) the community level, resulting in change of behaviour through second order learning, reflection and interaction with others[127].

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[123] See pg. 25 of the Common Approach.

[124] See pg. 23 of the Common Approach.

[125] See pg. 23 of the Common Approach.

[126] See pgs. 19 & 24 of the Common Approach.

[127] See pg. 26 of the Common Approach.